

LETTERS AND PAPERS
ON
AGRICULTURE, PLANTING, &c.
SELECTED FROM
THE CORRESPONDENCE
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VOL. VIII.



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INTRODUCTION.

CONTAINING

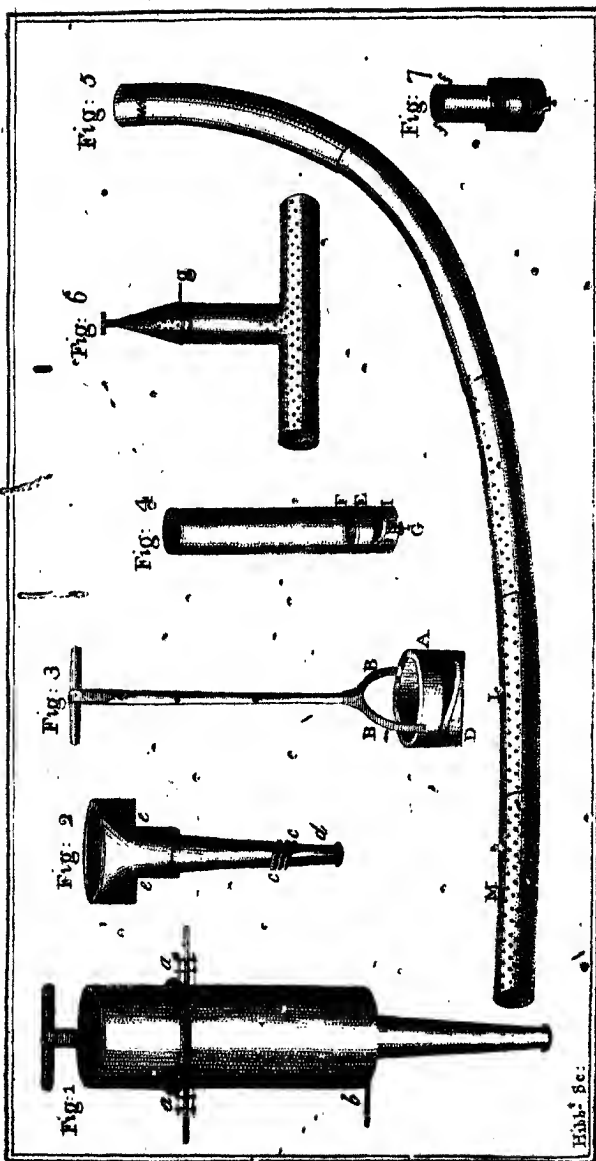
An account of various Topics of Experiment and Observation, which have engaged the attention of this Society since the Publication of the last Volume.

[By the SECRETARY.]

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portant in itself, and so productive of discovery, that the publick-spirited gentlemen who first associated under the title of the Bath Agricultural Society, could not have formed to themselves the expectation of living to see their efforts in that line carried even to the borders of maturity. Some of them, however, have lived to find themselves congratulated by their countrymen at home, and by the lovers of improvement abroad, with considerable success in the objects of their pursuit. Thus animated with increasing hopes of usefulness, they continue their support. And though mortality has removed many members, and choice and other circumstances have removed others, during a lapse of near twenty years—the survivors have the satisfaction to see themselves gradually joined by a greater number, and those from the most intelligent and opulent ranks. The correspondence of the Society having constantly increased, the expences of publication, experiment, patronage, and reward, have augmented in proportion. And though the annual income (never large) has increased considerably, the funds have not yet accumulated so far as to enable this Society to do, by pecuniary exertions, what has been more happily in the power of the larger Societies of London, and of Dublin.

In the origin of the institution, it was reasonably supposed that a Society like this would be remembered in the final bequests of some gentlemen of opulence, who might wish to extend their encouragement to favourite objects beyond the period of their lives—and the hint has been continued in the Premium-Books, annually printed. But it happened that about nineteen years passed over before an instance of such a bequest occurred. At the end of that period the Society received a letter from the executors of one of its

members, the late excellent WILLIAM BENSON EARL, esq; of Sarum, that he had left the Society one hundred guineas. This generous donation has been directed to be commemorated in gold letters, on a tablet placed in the Society's principal room—and it is not so placed without hope that it may excite in other gentlemen similar instances of publick generosity.

It may possibly be pleasing to some of the readers of this volume who are not members, and to members who from their distance are unable to attend the meetings and business of their brethren, to know what are the topics which of late have principally engaged their attention. They have seen, in common with numerous well-wishers to their country, the laudable endeavours used by the Board of Agriculture, to ascertain the real state of the lands of England, Scotland, and Wales; and have not been wanting to lend their assistance, by encouraging their most capable members to be aiding and assisting in that most useful undertaking. And having long had in contemplation, the great advantages which they conceived must result from a more general inclosure of open, and especially of *neglected* open lands, through the kingdom, it was with peculiar satisfaction that they found the views of the Board extended to so grand an object. Actuated by such sentiments, this Society was early and earnest in a petition to Parliament, to favour the bringing in of propositions for a general Inclosure Bill: and although that business has not yet been matured into the passing of an act; and some speculative differences of opinion may possibly have operated, may continue to operate, and may occasion some delay; it is hoped that every member of the Legislature will give it so full a consideration as to be able to judge satisfactorily of the measure;—and it

is presumed the consequence will then be, a sufficient conviction, in the majority of Parliament, to insure ultimate success! It will not be disbelieved by the candid reader, that there is in this Society a very respectable number of Gentlemen, whose talents and practical pursuits had qualified them to form a sound opinion: and that the almost unanimous vote of the large annual meeting of 1795, in favour of the petition, was in itself a strong proof of the propriety of the step they took. Fortified by such immediate authority, it will not be deemed presumptuous in the writer of this introduction, if he uses the sanction he possesses, and indulges a little of the ardour of his own mind, in here discussing a subject, which he has much at heart, and about which his thoughts have been necessarily employed. It is certain that though in the late alarming dearth of provisions, and of bread-corn especially, a large majority of our countrymen seemed decided in opinion, that a general inclosure ~~would~~ insure the greatest improvement of waste and neglected lands; some few persons of good sense, and much philanthropy, are continuing to doubt the wisdom of the measure in question.

When we consider that such is the imperfection of human reason, that a diversity of opinion has prevailed on almost every subject which has engaged general notice, however clear and obvious it may have been to the common sense of mankind; it will not appear marvellous that this attempt should not have furnished an exception. But we owe to the cause even of abstract truth, many occasional endeavours to set it in a clear light; and to a subject so much connected with practical advantage and comfort, we certainly owe our endeavours to divest it as much as we can of uncertainty, and those errors in which inattention or prejudice

prejudice have involved it. This reason I cannot but feel on the present occasion; and so feeling, have a lively motive to plead for, what appears to this Society, an essential article in the cause of national happiness!

I have been assailed, in common with other advocates for inclosure, with several objections; as,

1. "That a general inclosure of common and waste lands, on which many poor country people have been long accustomed to maintain their families, (by raising geese and fowls, keeping a few cows for milk, breeding calves for sale, breeding and keeping small horses, mules, and asses, for various purposes, and rearing pigs for sale and for their families) would entirely destroy this species of maintenance, and involve multitudes of such persons in new difficulties and wretchedness, almost to extirpation."

Some are ready warmly to contend, also, "That this mode of occupying a part of the lands of the kingdom was the principal remaining check we had against the inconvenience of monopolizing, and increasing the size of farms."

These objections are thus fully stated, because it is proper they should be fully considered.

If, indeed, it were as probable, as the contrary seems evident, that the comfort and rational happiness of the class of persons alluded to, were dependent upon their so living, and so using the common and waste lands around them; still an important question would arise, *Whether the land was so occupied as to be compatible with the interests of the far greater number of poor persons, who are obliged to live otherwise?* And if the answer must be in the negative, it would follow, on the principles both of strict justice and philanthropy, that such a system should be changed. Now this

is clearly the fact; for it is demonstrable by argument, and abundantly confirmed by experience, that such lands, when inclosed and improved, (and great improvement is the consequence of inclosure) will yield abundantly more produce per acre in grass, and abundantly more value in corn, and other intervening crops, than they ever did, or could do, in their open and neglected state. This is a fact too evident to be denied. And if a greater quantity of food be produced, is it produced to be eaten or destroyed? To be eaten most certainly; and that chiefly for the subsistence of man, immediately or remotely: that is, partly for immediate consumption as human food; and partly for the subsistence of a greater number of cows, to produce milk, butter, and cheese; and for feeding a greater number of horned cattle, sheep, and swine, for the general consumption of the country. The greater the number raised and fed, the greater must be the number brought to market—and in proportion to such a supply at market, will be the general reduction of prices for all the different articles: just as the plenty of manufactured goods, brought to market, or brought into the general stock, will tend to keep down the prices respectively, be the manufacture what it will. The manufactures of Manchester and other great towns may serve as a proof of this, notwithstanding the prodigious *exportation* of those commodities. This argument from fact will appear the more conclusive to our purpose, when it is considered, that the different articles of corn are positively prohibited from exportation, till the price falls to a certain standard, which is generally considered as sufficiently low. Whenever the price rises again above the standard, exportation ceases by the act of Parliament. The language of complaint, indeed, is not uncommon, in dear times, that,

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notwithstanding this act, exportation *proceeds*, and the country is deprived of its food, by the baseness of individuals, and the supineness of government. This is a complaint in which the multitude is always ready to join, on supposed or no evidence; and sometimes, as lately,* against the greatest probability. It is not always certain that the wise provisions of the act can with the most rigid strictness be enforced, and their object secured, in a maritime country like this, and in a time of general scarcity, arising from the failure of crops, and the confusion of warfare: it is not in human wisdom and vigilance wholly to prevent illicit conduct. But in the matter before us, let those who would possess the best feelings of *man*, ever remember and inculcate, that when corn will pay for clandestine exportation at high prices, and at the risk of forfeiture, it is a proof that want has invaded the dwellings of some human beings, who must either be fed or perish! This thought may be extraneous, but it lies in a little room, and will not be deemed improper by the best friends of humanity. If, however, the voice of complaint has been frequently heard against clandestine exports, under circumstances of *smaller* produce, we have from thence also a powerful argument for adopting such a system of managing our land, as will most speedily and effectually secure a *larger*.

Were it true, that by the casual and irregular efforts of poor persons, inhabiting the borders of commons and wastes, a greater number of young cattle, sheep, and pigs, are brought into existence, than would be by regular farmers cultivating such lands in a state of inclosure, (which idea cannot be granted) there would still be these further im

In the scarcity of 1794 and 1795.

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portant questions: *Can they be likely to be so good in their kinds? Have such persons equal advantages of giving their stock the necessary supply of regular food and nourishment, even in summer, for duly pushing their growth before winter; and especially in winter to preserve them from stunting, and the various maladies to which young stock, in barren and swampy situations, without fodder, without litter, and without covering, are continually exposed?*—It is obvious, that, from such want of advantages, the hopes of those poor persons are often disappointed, to their own immediate distress, and the ultimate loss to the community at large. Even in rare instances more favourable to their views, and where from local advantages and comparatively greater skill and care they happen to have been more successful in the summer season, they *must* in general bring their stock to market before or in the severity of winter; and being obliged to sell, must sell at such prices as their more opulent neighbours ~~will~~ give them: If at high prices, it is a proof of general dearth, to which a too-confined cultivation has doubtless contributed; if at low or middling prices, they seldom are gainers by their pursuits—for having been obliged to subsist partly on credit till the season of selling, they are rarely able to do more than pay their debts at last. The beginning of the year found them poor—the end commonly leaves them so. And unless they happen to be under a stronger moral restraint, than their station and habits in life are favourable to, they are tempted to assist themselves through the winter, by poaching, purloining, and creeping again into debt: for in general they have no regular habits of labour for themselves, their wives, or their children. Thus they too frequently degenerate from bad to worse, and set a loose and baneful example in the

the districts in which they live. Such persons are too often found to be horse or sheep-stealers, and nocturnal ravagers of field crops, gardens, and hen-roosts: And hence, by exciting just fears among regular farmers and village house-keepers, of having their property plundered, these persons are discouraged from raising for market those small articles of provision, which otherwise their disposition would induce them to raise, in greater abundance!

All classes, it is certain, afford some instances of superior management, and superior rectitude; otherwise society would more rapidly degenerate into wickedness and barbarism; notwithstanding the necessary controul of laws; and charity would induce us to hope that individuals may be found, in the class alluded to, to whom these strictures will not apply. But if we compare the generality of those remote and "*independent cottagers*," so frequently pleaded for, with such as are regularly employed in country labour, or with the active labourers in trades and manufactures, we shall certainly find, on the whole, that the former are greatly losers by the comparison, in morals, in reputation, and in domestic comfort. Neither does the mischief end with them, but is extended into national disadvantage, of a serious and malignant nature!

Another objection which several well-meaning gentlemen have urged, in the conversations with which I have been favoured, on the topic in question, is this:

2dly. "That the commonable lands, in many uninclosed parts, now bearing abundance of grain, would be thrown too much into the power of the occupiers; for that they, in order to lessen the burden of tithes, would be induced to convert arable into pasture, because by such conversion they could make more of such lands, which would materially

“ rially lessen the growth of corn, to the very great injury of
 “ the community; and that late experience of the high
 “ price of grain proves, that the country cannot spare any
 “ part of its arable.”

On the strength or supposed strength of this objection, several gentlemen actually refused signing the petition to Parliament from this Society, for a general Inclosure Bill. Narrow and inconclusive reasoning! Let us appeal to the common sense of mankind in general, and to the recollection of the aforesaid gentlemen in particular, *Why at any time has the farmer changed his arable into permanent pasture?* “ Because,” say they themselves, “ he can make more of it, “ tithes being lessened,—and the demand for the produce of “ pasture is supposed to be increased.” For the present, we will wave the consideration of *tithes*, that we may mention them more distinctly by and by, and combat here the general reasoning, “ *because he can make more of his land in pasture.*” And is not this very reason a clear proof that the country *wants* such additional pasture? Had there been no such *want*, no such *superior demand*, for that kind of produce, the land would not yield the superior profit. The demand at market proves the want, and justifies the change—and a progressive change too, till the profits become more equal. And it is most certain that such a change will be continued, so long as the stimulus of greater profit lasts. High as the price of corn has been, our argument supposes, and it is notorious, that the produce of pasture lands, in milk, butter, cheese, and meat, has been high also,—has advanced to a serious and alarming height,—calling aloud for an addition to that sort of land, in order to increase the quantity of its produce. The prices of those articles now, on a comparison with those of corn, might supply the place of all argument

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on this subject. The prices of corn are again very considerably reduced—far more so, in proportion, than the prices of pasture produce. How has this suddenly happened?—plainly because, high as pasture produce was, the call for corn had become *more* loud and alarming, and the good sense of the farmer prompted him *immediately* to give an additional quantity of his land and labour to the increase of corn. He supposed, with reason, that such a change would, in its turn, pay him better. Much, undoubtedly, is due to the laudable exertions of government, in offering liberal bounties for the importation of corn and rice, which produced by anticipation a considerable check in the prices, and afterwards a most seasonable supply; the enterprising spirit of our merchants, quickened by the alarm in the nation, so far seconded the exertions of government, as to effect importations from countries where grain and rice were high—for indeed they were no where cheap,—and instead of gain, much partial loss must have fallen on many importers. Thus the general reasoning of farmers, and the speculation of merchants, concurred to the same end.

Whether a general scarcity in most *other* countries, (where the popular complaint of large farms, and overgrown farmers, cannot be assumed as the cause) has arisen from the waste of warfare in Europe, from unskilful farming, from the too small quantity of land in tillage, or from a combination of most of those causes, the consideration is still serious, and demands all possible attention. But let it be remembered, as a maxim most sound and general, *that scarcity of grain has not been, cannot have been, occasioned by a culpable neglect of individuals to cultivate the growth of grain, in preference to pasture.* Such could not possibly have been the fact, unless ideas of compensation
can

can be supposed to have become *inverted*, and that there existed a combination, or an absurdity of policy, through different countries, to realize a *lesser* emolument, in preference to a greater.

General and praise-worthy as the present taste for agricultural improvements is, among persons of property and leisure, it is but too probable that the quantity of land in cultivation through Europe, and in this country especially, is *too small*. This probable evil was, most benevolently and laudably, proposed to be obviated at home, by the provisions of a general inclosure bill. And by such provisions for speedy and easy inclosure, and consequently for additional cultivation, the most considerate persons are firmly of opinion, that the grand object of the common wish, a full supply of grain, is to be accomplished.

In the view of common sense, this seems to be a radical and sure method (under Providence) of accomplishing the object of the general desire. For, let it be supposed for a moment, however unreasonably, that the casual difficulties, and scarcity of this country, in the article of grain, have been occasioned by too great an appropriation of land to pasture; and that the effect of inclosing commonable lands would be, the still greater conversion to pasture of such arable districts: let it be supposed, that so large a quantity, as two millions of acres would, under such an act, be even *permanently* so converted; and that such a scale of conversion to pasture would answer the ends of emolument to the persons so changing it; that emolument could arise from no other source than the aggregate choice and demand of the publick. The *choice* of food is the natural, and even the *moral right*, of individuals in a community. Excess, gluttony, and waste, in the articles of subsistence, are the main evils,

evils, under this topic, of which we could have a reasonable right to complain; or to which any warrantable restraining policy could be directed. But we do not make this hypothetical concession in favour of so converting two millions of acres, at any risk of lessening the arable produce of this country:—most certainly not! To *twice* the amount of this quantity of additional pasture, we are warranted in contending that the country may go; that it may be looked on in the light of a most valuable acquisition; and still only as a *part* of a much greater, within our reach!—The waste and uncultivated lands in England, Scotland, and Wales, are set down in the County Surveys, which do so much credit to the Board of Agriculture, at more than *twenty millions of acres!* Let us suppose that only one half of this quantity is capable of being inclosed, and brought into new cultivation! On this hypothesis we can not only replace to arable culture the two millions of acres, which a timorous reasoner may suppose to have been misapplied; but, after giving (if wanted) another two millions to pasture, we shall have six millions in store for the operation of the plough, and to give additional labour for additional hundreds of thousands of peasantry, now supposed to be scantily employed, or who may hereafter be born into existence. To this consideration may be added another, of no trivial importance, viz. That by the inclosure and cultivation of one ten millions of acres, the other ten millions will become of double, and perhaps ~~triple~~ the consequence, from the local uses to which they may be gradually applied.

Here let the philanthropist employ his mind, and anticipate new encouragements to the virtue and endearments of *conjugal union*,—now, alas! but too lamentably obstructed, to the gradual declension of national strength, and of mo-
rality,

rality, in the lower ranks of society ! For with all the boasted glory of British arms, and British commerce, unnumbered thousands of fellow-beings, who might flourish in our fields, seem now to be only born to the miserable alternative of unnatural solitude, or vicious and barbarous intercourse ! Here let the manufacturer and the merchant, who are emulous of the most honourable pursuits, in their respective stations, anticipate the means of employment, on the most solid and liberal foundations. Here let the owner of lands, instead of fearing (if it were morally allowable to fear) a depreciation of his property, anticipate a stable and substantial value to his fields, his mountains, and his vallies !—Here let the government of these countries, wisely desirous of cultivating peace, of augmenting security, internal strength, and national greatness, lay the only sure and permanent foundation, on which to rise from the calamity of warfare, into the proper dignity of our peculiar situation.—Here let the advocates for Christian morality, who take into their account the usefulness of steady, honest, and laborious industry, ground the most auspicious arguments, for the renewal of those moral bonds and virtues, which they have so long and ineffectually been heard to deplore the want of !—It is a general complaint, not only among the most serious professors of religion, but among reflecting persons of various descriptions, that amid the splendor of arts and sciences, of foreign commerce, and the luxury consequent on national wealth ; internal poverty and wretchedness, among the inferior classes, are too little alleviated, till by accident they become subjects of hospitals and infirmaries ; these indeed are frequent and noble edifices—and their endowments and support do credit to the sympathy of the English people. But it has been lamented, with some colour of reason, that a calm, deliberate,

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rate, and provident benevolence of mind, is less characteristic of English feeling, than the occasional and extraordinary. This remark, if well founded, is yet far from discouraging; it admits a noble capacity and a noble disposition, for extraordinary exertion; and from which we may hope for noble, generous, and comprehensive improvements.

The frequent ignorance, and dissoluteness of manners, consequent on a precarious income in country villages; and a necessary resort of multitudes of young persons to cities and towns, have been too little the objects of publick attention. The want of agricultural employments, and other comfortable inducements to a country life, will always, without a radical improvement in our domestic policy, continue to produce and augment this national infelicity. The dirt and indigence in which numbers of our country cottagers live, forming a mortifying contrast to the allurements of towns and cities, occasion a too common discontent and disgust in young persons:—hence their too frequent migration from the districts of their nativity—their inticements to depredation, prostitution, and the numerous evils of a crowded life. To remedy these evils, it is to be lamented that country gentlemen, and other considerable land-owners, are so little attentive to rural policy in the improvement of cottages, and the annexation of small pieces of land, for orchards and gardens, thereby to allure and fix the most active and useful of the peasantry:—An increase of whose number, even in the present state of our agriculture, would often be found of great importance to the seasonable management of our fields—for expeditious sowing, weeding, hoeing, and getting in of all sorts of crops. To the general want of hands, for those various purposes, may be attributed much of the slovenly system which prevails in many districts, and the

the delay, damage, and scarcity, which have been constantly complained of.

An increase of the number of well-instructed labourers, is confessedly much wanted; and nothing can bid fairer for a general alteration in this important matter, than a new occasion for building cottages, and setting examples of neatness, and comfortable accommodation. Such new occasions must naturally arise among the effects of a general inclosure of waste and neglected lands. When we consider modern improvements, in the elegant simplicity of building, which has taken place of late years, and the emulation in useful arrangement and taste, which a general opportunity would occasion, we may venture to predict the most pleasing and happy effects from such an occurrence. The new and extensive example would naturally become a marked excellence in the country. As the occasional improvement of a few houses in an old and incommodious town, leads gradually to more general neatness, (when repairs become wanted) so the old country cottages, and miserable huts, in which indolence, dejection, disease, and indelicacy, have been long propagated, will gradually become improved and re-built; and the allotment of land for useful garden purposes will become increased, to the improvement of the inhabitants in the essential articles of industry, health, decency, order, and contentment! The country would thus by degrees, and perhaps not by slow ones neither, acquire a new face of *civilization*, respectability, and ornament.

And here let me speak with confidence on one very important advantage to the poor, and to the nation, which I am well assured would result from the intended powers and provisions of a general inclosure bill,—the direct opposite of what some suspicious minds would persuade us is intended!

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They would predict a still greater proportional increase of large farms, and thereby a serious injury instead of a service to the country.—No such division is designed; no such division could naturally follow: for, beside the general conviction of the propriety of increasing the number of small and middle-sized farms, the numerous unequal interests to be provided for in the division of lands, would necessarily occasion a very frequent allotment of small parcels, in such situations as to require the erection of small farm-houses, offices, and cottages, to render them useful. But in addition to this natural result of a publick measure, it is to be considered that one prominent feature of that measure is intended to be—a *strong recommendation*, that a large addition to the small and middling farms of the country shall be carefully made. It is not in the power of human foresight to determine the precise proportion of such additional small farms to the large ones: and the subject must, from its nature, be left in a considerable degree to the presumed good sense and publick spirit of the persons to be invested with the authority; but from that good sense and publick spirit, accompanied by a constant recollection of the general wish, it cannot be reasonably doubted but that the proportions will be greatly altered. Without trying the effects of this publick plan, it is certain that no new and salutary amelioration can be expected:—under it, the chances of permanent benefit may be relied on with confidence. But supposing the worst possible: supposing the *least* beneficial policy, in the article of division, to obtain, contrary to all probability, viz. that additional *large* farms were to be generally adopted—still this would not be a reason why the measure of a general inclosure bill should not be preferred to the present slow and casual progress of improvements. A great addition

of large farms through the country might not give due scope to a desirable increase of sober, industrious, hardy, and valuable heads of families, in stations which may be frequently attainable by an industrious labourer, and of course be considered as the publick reward of active, unassuming usefulness; but such an addition, as being abundantly more productive, and as calling for a more numerous peasantry, would be infinitely better than the present state of things. It would be, at any rate, a grand addition to our means of increasing the quantity of farming produce—and the immense additional store must inevitably tend to the counteraction of monopoly: for beyond certain moderate limits, such monopoly could not go, but at the hazard, not only of loss, but of ruin to the parties concerned. This principle is clear, and its effect certain; as any mathematical demonstration!

Taking it for granted, that for reasons assigned, and from the reflections of the intelligent reader, an alteration in the general face of this country will appear desirable, and indeed necessary; I may, perhaps, be indulged in enlarging a little further on my favourite part of the scheme—a part on which too much has never been said, or can be said, till experiment shall have superseded the use of argument: I mean *the improvement of cottage-building, and the building of convenient houses and offices for small farmers.* These have been topicks of the Society's continued notice, and indeed of its solicitude. The plans already given in for cottages and gardens—and the premiums offered for plans of small as well as large farm-houses and offices, speak this. And it is with pleasure I can remark, that in my intercourses with the publick I have found those objects generally *applauded*, however inconsiderable the further effects have been.

Costly

Costly and superb buildings in cities, and magnificent mansions in the country, are objects of general admiration. They are considered as the noblest external ornaments of polished life. They excite the commendation of foreigners, who often bring a bias from the mansions of monkish superstition, and the splendid distinctions of a feudal aristocracy. Elegant edifices, thickly reared, are the constant theme of exultation among ourselves: the degree of that exultation too often borders on a mischievous vanity, and excites an injurious emulation. Emulation of magnificence, in the stile of accommodation, is generally unfavourable to morals, and (by the surest of all consequences) to human happiness. A superb and costly edifice is a cumbersome article of property in itself, and is often gradually augmented, to a size and to a style of splendour, incompatible with the general interests of the owner and his family, rendering doubly disadvantageous the principle of *primogeniture*, which (however defensible on the score of family consequence) is in itself sufficiently embarrassing to numerous families.—The tax laid on posterity for the support of solitary grandeur, is often found irksome; and to support, with a supposed consistency, the dignity of family possessions, leads into numerous expences, unfavourable to the present comfort, and future security of the occupier. Hence the incumbrance of estates, where they cannot be sold—and successive sales, where they can, till the mansion is no longer supportable. The stately building goes to decay, and either becomes an inappropriate and dilapidated farm-house, or is totally abandoned and pulled down on account of the weight of its repairs. To build another farm-house on a suitable scale, is incompatible with the finances of the owner—and at once to get rid of the inconvenience, the land is let

in connection with an adjoining farm! And hence, perhaps, more than from many other single causes, we may date the accumulating evil, so much complained of, the present disproportion of *immoderately large farms*! This occurrence, although too obvious to have escaped the notice of others, seemed also too obvious a part of our subject to be passed over without remark. And although it be of a nature for which a general remedy cannot be expected, if politically to be wished, yet the consideration of it, by the way, may at least have a useful tendency. An extreme reverse of this supposed evil may be equally unfavourable to the common interests of the country. The *golden mean* has been deservedly celebrated in theory, and will never be found unsalutary in practice. We may safely conclude this part of our remarks, by observing, that, among men of moderate landed possessions, where one has lived to lament his caution in the expences of unnecessary building, many have had cause to blame their profusion!

Among the objects of useful ornament in an agricultural district, one of the most conspicuous and striking is a well-designed, well-proportioned, snug, and simple mansion, with suitable offices, adapted to the consequence of a substantial land-owner, or wealthy yeoman, without necessarily impressing on the mind the idea of expensive splendour and luxury.

The next in order, more useful, because required to be more frequent, and scarcely adapted to give less pleasure, is the plain, neat, convenient, and well-proportioned farmhouse, and homestead. These are buildings which, generally speaking, can never be out of use—can never be either an incumbrance on the land or on the country. The expence of their preservation is easy; and in general the preservation of farm-houses, and offices, by the tenant, may be made one test of his worthiness to have his lease renewed.

In cases where lands are to be inclosed, new farms to be formed, and new buildings to be erected, a judicious choice of situation, with regard to that of the lands, and also respecting water, healthiness, and warmth for cattle, is a first object, and of great and lasting importance. Under this idea, smaller objects, as nearness to a stone quarry, to an old orchard, or to a few casual walls or buildings, should be made to give way—for it is often evident that farm-houses are so inconveniently placed, perhaps originally to save a first expence of 50*l.* as to make a farm of moderate size full 50*l.* per annum less valuable to a good farmer. The community in such cases always ultimately suffers. A complete previous plan and estimate of the whole, are indispensable to the builder's security and satisfaction. By such prudent procedure, it is reasonably concluded, that the adaptation of the buildings to the land, may in general be so complete as almost to insure their transmission *together* from one generation to another—and that with the satisfaction that their connection is compatible with the greatest usefulness in the district, and to the community. These conveniencies and benefits have often engaged the consideration, and indeed the sollicitude of this Society, perhaps never more opportunely than at the present period. And though opinions and precepts on this topick must, for obvious reasons, be more theoretick than practical; the sanctioning theories of experienced and practical men will not be deemed improperly introduced in a book of this sort; nor will a well-meaning Secretary be considered as impertinently employed in pursuing such sentiments. Under this assurance, I am emboldened to continue my remarks on buildings—yet a little further.

Few opulent country gentlemen are so surrounded by grandeur, but that within their neighbourhoods, and sometimes on their own estates, they have to pass the abodes of poverty, rendered pitiable by incommodious and wretched buildings—the sight of which is at once disgusting to the eye, and discreditable to their owners, in proportion as they have the power of improvement. I use no stronger word than *discreditable*, because I cannot suppose that in general the defect arises so much from wilful want of kindness, or of good policy, as of habitual attention to the subject. So frequent are the instances of gentlemen suffering themselves to be drawn easily into unnecessary expences, on trivial occasions, or for trivial objects—so common their indifference to opportunities of emolument, far beyond the expence of a new cottage,—that their neglect of such improvements, must be attributed to other causes than *covetousness*;—nor will pride and disdain account for it. It seems to have been considered as a thing of course, (so far as it has been considered at all) that poverty of circumstances, and incommodious habitation, are in necessary connection. But a little reflection may convince an ingenuous mind that, though to a certain degree, poverty of circumstances be necessary in the laborious classes, and is no moral or political evil, yet decency at least is desirable in all our fellow-creatures—and that in proportion to the general decency of servants and dependents, is their general usefulness in their several stations. No reasoning man expects in an equal degree those useful qualities, and that comfort, from taking as inmates into his house, servants who have been in habits of dirty living, or who have not attained practical notions of cleanliness and decorum; as from servants of different

habits

habits and acquirements. This idea, extended to out-door labourers, will hold equally true—and in order to have them the most actively useful in their stations—to acquit themselves with judgment and dexterity—and indeed with that useful *taste*, which every field employment requires or admits, they must have acquired strong habits of decency and of order. This gives men of every station a bias to exactness and propriety, in every part of their labour;—and the more they have been so practically accustomed at home, the more habitually will they aspire to excellence abroad. Whether the business to be done be the cleansing of a stable, a pen, or a fold for cattle; of a farm-yard, a pond in the field, the making or mending of a ditch, the planting or plashing of a hedge, the grubbing up of weeds or brambles, the mending of a road, or whatever else in these common offices of the labourer; any or all of them will be done the better, by how much the labourer has been accustomed to value conveniencies, and the appearances of neatness in and about his own dwelling. If he be accompanied in his labour by one or more of his own children, they will naturally emulate the taste of their father—and they will in general not fail to carry those ideas of useful exactness, alternately, from their cottage to the field, and from the field to their cottage. But if the cottage be so small, or ill-contrived, so shattered and miserable in its lights and covering, and ill-accommodated with garden ground, that it cannot be made healthful, pleasant, or profitable, they have not a reasonable motive to delight in it, or to exercise ingenuity and industry about it, in their morning and evening hours. Indeed, generally speaking, such miserable cribs have seldom any quantity of ground to exercise ingenuity and industry upon. A piece of potatoe ground is, perhaps, got at a distance:—this

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is inconvenient, by occasioning a waste of time—it detaches too much the eye of the father from his family—if he delights in his garden, it is in the wrong place—order and harmony at his home are the less preserved—his hut is the least object of his liking—it receives no regular share of his short attentions—he returns to it in the dark, merely as to a den, in which he may lie down—and from which he may depart again as soon as he can open his eyes.

But, give to a young man, about to settle in a life of useful country labour, the requisites for domestick fixtue and enjoyment; give him, at a reasonable rent, such as may pay the builder four per cent. for his money judiciously laid out, a cottage, simply but neatly and conveniently built, with two or three sleeping-rooms, in one of which his wife may lie-in with detached decency—give him a well of water—or place him by the side of a running stream—give him at least half an acre of adjoining ground—and give him an assurance of continuance, and of constant employ, on condition of his industry and general good conduct; and you will most likely lay the foundation of much happiness, and much respectability—fix for life a faithful and grateful servant—and add to the strength of the country by the most healthy population. A sum, perhaps not exceeding 50l. or 60l. thus laid out, at moderate interest, may do all this!—For the sum of 500l. or 600l. laid out *together*, (which to many gentlemen would be no inconvenience) or at *different* times, (which to others might be more agreeable) may be produced a little colony of labourers, living in neatness and comfort; a picture which, in the mind of a benevolent observer, would be a more lively and pleasing ornament than all the superfluous horses, and all the dog-kennels, in the universe. The annual expence of this human, and hu-

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mane establishment, reckoning the most strictly, would be only the difference between four per cent. for a small sum of money, and what it might be supposed to produce by other common means, out of trade! Suppose one per cent. on the average were lost: this, in figures, makes a sinking on ten cottages, of 5*l.* per annum!—Suppose, in the extreme, that two per cent. can be lost; this would not amount to half the expence of one unnecessary horse—or one foot-boy in livery! But when we consider the advantages of possessing such a set of tenants, as labourers, and the superior pleasure of beholding their happiness, the scale will abundantly turn in favour of our object.

Examples of publick spirit, and of sound benevolent policy, not only excite notice but imitation. And if one gentleman of fortune in a neighbourhood were to set, or begin such an example as this, we need not despair of seeing that example soon followed, or indeed of its becoming generally imitated. Such philanthropy and sound policy would have their most happy effects: and become the means of gradually exalting a useful country life into that simple and proper dignity which really belongs to it. It would not be laying a foundation for indolence, pride, or arrogance: those inconveniences to society are not to be expected from rendering laborious men comparatively easy and happy. Constant labour is annexed to this diffusive plan of comfort; and it is too necessarily a main part of the system, and a regulator of the whole, to admit the usurpations of ease and independence.

The benevolence of many gentlemen may induce them to accede to this general reasoning; but some will object to the risque of entailing the expence of a number of poor on their manors by settling them on their own estates. So far as this objection is founded, even in local circumstances, it must

must be admitted to operate as of some weight ;—for, however generally and fairly the scheme would promise an exemption from incumbrance, by the greatest probability that such tenants would maintain themselves, and live superior to the idea of taking parish-pay,—yet from severe sickness—the death of parents—and the smallness of orphan children, some instances of expence may possibly occur : and we must not expect, under such possibilities, that gentlemen will stifle the objection. But in numerous instances similar improvements may be made within the bounds of common parishes—still on their own lands—and that sufficiently near for gentlemen to enjoy the pleasure and partake the benefit of such useful works in society. But this objection is also to be obviated in another, and in a more generous manner. On a supposition that a gentleman should chuse to build ten or a dozen cottages, as aforesaid, on the borders of his own estate, the parish being wholly his own—and that in compliance with antient custom, he should be actuated by caution against the expence of paupers : He might secure himself from such contingent expences, and at the same time improve the condition of those families, by erecting them also into a club or friendly society—that best of all provisions for the casualties of life—that best of all means for exciting and continuing the ideas of œconomy, sobriety, and happiness. These ten or twelve men, by a contribution of one halfpenny per day each, out of their labour—or perhaps two-pence per week, would soon establish, under their landlord's superintendance, such a *fund* as would amply secure him against any such contingent expence, either by sickness or death ; and be an additional source of rational delight, to minds capable of delighting in the happiness of the ranks below them. The trouble of this mode of provision would be the most trifling—some one of the cottagers themselves, as head and father

father of the colony, by his age, capacity, and superior virtue, would be pleased with the office of collecting the money, and keeping the simple account—or it might be retained, with the weekly rent, out of the weekly pay, by the persons paying them their wages. This plan may not only be considered as a rational mode of preventing cottagers from becoming burdensome to the manor or district in which they reside, but it would be setting a practical example of that mode of altering the general condition and prospects of the poor—which are now truly alarming—and which the enormous burden and increase of the poor's rate proclaim aloud must be altered, or the growing consequences will be insupportable to the middling classes.—It has been contended, with the strongest appearance of truth, by several ingenious writers,—it has been *proved* by the writings and practice of others,—and particularly by that able writer and most benevolent man, Mr. PEW, of Shaftesbury, that the plan of such contribution, aided by the friendly care and assistance of a few persons of steady discretion, in the different districts through the nation, would totally change the face of the country, and redeem the whole mass of poor from that wretchedness in which they too generally live, and to which the present system of support naturally tends!

The late dear seasons, to which we have already alluded, suggested the necessity, as most of our readers will remember, of finding temporary substitutes for wheat-flour in making bread. Under those circumstances, so much the subject of alarm through the country, it was to be expected, that this Society should give its attention to such topics of œconomy. The mixture of equal parts of good barley and wheat, of good wheat, barley, and rye, and even in some cases with a small mixture of bean-flour, it has been long known, would

would make a hearty nutritious bread; such bread would not only suffice to carry the bulk of a country, with cause of thankfulness, through a season of scarcity, but some of those mixtures might be deemed even *pleasant* for common use. To those mixtures, it is well known, a large number of persons in country places had successful and seasonable recourse. I say *seasonable*, because, however popular opinion might vary, as it certainly did, about the real or supposed scarcity of wheat in the last two years, it was a fact undoubted by many diligent and candid enquirers, that the scarcity of wheat was *real*; and but for the resort to *substitutes*, and bounties for importation, must have been more severely felt. But there was one article of farming produce, which within the last twenty years has become abundant beyond what our forefathers had any expectation of, and which is now deservedly recommended as of prodigious national importance, i. e. the article of *potatoes*: to the use of this article in bread it was to be expected much regard should be paid—and the fact was so. This Society was not wanting to promote experiments which several of its most active members were assiduous in making, to ascertain the degree of utility resulting from the best proportions of such a mixture, and the degree of advantage. It was found to be a fact, that with no inconvenient trouble, the proportion of one-third potatoes to two-thirds of wheat-flour, or one-third wheat and one-third barley-flour, (but especially the former) would make a wholesome nutritious bread:—It was found also that to take mealy potatoes, fresh boiled and peeled, and break them up warm in the sponge, was an advantageous mode of using them. The result of different experiments; as to the proportional weight of bread arising from the use of potatoes, was various—perhaps depending

nding on the different degrees of farinaceous substance,
 different sorts of potatoes, and other small causes not
 fully ascertainable. But, on the whole, the experiments
 ent to the general establishment of an opinion, which it is
 not expected will be superseded, that the most advantageous
 mode of using potatoes in poor families, is that common one
 of eating them, simply boiled, either as a complete substitute
 for bread, or of bread and other articles of consumption
 often eaten together. In this common state of preparation,
 it is well known the poor of this country have generally used
 them; and but for the abundant supply of the article in
 question, so used, it is hard to say how innumerable families
 of poor persons would have subsisted at all, under the cir-
 cumstances to which the nation was reduced. The severe
 period of trial, and the comfortable effects felt from a large
 cultivation of this root, have tended to confirm the hereto-
 fore supposed fact, that whatever shall be the success of po-
 pular endeavours to bring more land into cultivation, the
 extended culture of potatoes is an object of high import-
 ance—and that when their various uses are considered,
 in the immediate sustenance of human life, and for the sus-
 taining and fattening stock, the quantity to be raised in this
 country cannot easily be too large. That cultivation, there-
 fore, by the various improved modes of carrying it on in
 the field, and by shoots which would otherwise be thrown
 away, and breaking off and transplanting the young tops
 as cabbage plants, where garden beds may be conveniently
 laid for receiving them, is earnestly recommended. It can-
 not be either expected or desired that this culture should
 materially supersede that of corn,—the value and *first* con-
 sequence of which are not impaired by the various disco-
 veries of the *secondary* value of potatoe crops; but as po-
 tatoes

running the risque of the miller's plunder, which they are so prone to complain of, and from which they seldom or never believe themselves safe. Two or three persons of prudence and care would easily manage the purchases at market; and by knowing the weight of the wheat they bought, and requiring from the miller a return of weights, both of flour and offal, would easily know, with exactness whether they had cause of satisfaction. A little attention would soon qualify those persons to judge very accurately of such business. The miller would find such grinding and dressing an object worth his attention, as he would be regularly and duly paid; and be better pleased with escaping, by having to do with competent judges, the usual complaints of various employers. But that the purchase of ready-made flour, by the sack, would be still better, I have not the least doubt, for these reasons: *1st*. The trouble would be less, and the concern more easily managed. *2^{dly}*. There would be no coarse flour and offal, to be used or disposed of, which, on the grinding plan, would occasion considerable difficulty, or perhaps jealousy and dissatisfaction. *3^{dly}*. It would be easy to ascertain the average price of wheat at the neighbouring markets; and, knowing the relative proportions between a sack of wheat of a certain weight and a sack of flour, it would never be difficult to purchase the latter on the best terms. And such a committee always paying ready money, and having a constant regular demand, for a popular purpose, would always be sure of finding meal-men emulous to serve them on the most moderate terms, and for a very trifling profit. To this fact another consideration may be added—For *wheat*, the full market-price must always be paid, (as such a committee would find it improper to speculate in large quantities of grain) and the supply of flour might,
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from interruption of the mill, and other causes, be often too young for consumption. But, besides having, on the plan of buying flour, the advantage of a regular supply, several chances are in favour of frequently buying such flour cheaper in proportion than the market-price of wheat. And as to the quality of it, I should recommend that it be never coarser than that dressed through the second cloth, having in it all the fine. This standard quality is more easily known, by attention, than suspicious persons are aware of; and it would commonly happen that some one or more persons concerned in the vending would be competent judges of quality. Good judges have no doubt that a preference of the best seconds, i. e. flour dressed from the meal through a second cloth, and consequently containing all the fine, should be given to any inferior sort; both because it would give the consumers more satisfaction, and because the general reasoning of the poor, in this matter, is right, "that the best bread is cheapest in the end for a poor family."—There are uses sufficient for all the offal.

Such remarks on *Bread* and *Flour*, though not strictly agricultural, will be excused; and, however differently gentlemen may happen to think on some points; they will at least allow that these are subjects, about which an officer of a popular society cannot be improperly solicitous.

Another object, of no trivial concern, has occupied the attention of the Society of late, and that is, the improvement of Cattle and Sheep for *general stock*. Of cattle and sheep, it is difficult to say which have been most the subjects of experiment in different parts of the nation, for for many years past. Individuals, as was naturally to be expected, have been sometimes prematurely sanguine in favour of particular races of animals which had attracted their

notice; and in favour of mixtures of different sorts, by the breeding of which they proposed to obviate some errors in size, and supposed imperfections of shape, which they concluded had been too little attended to by practical farmers; not forgetting the great object of most assiduous and speculative men, the deriving to themselves as much fame and emolument as they could, to compensate for their labour and expence. Of this description of men, the late sagacious and persevering BAKEWELL has been eminently distinguished: And perhaps never did an individual, in any age or country, do more towards exciting general notice, or raising a spirit of greater emulation, in the department which he chose. To his memory much respect and gratitude are due, and will not fail to be paid; while those who are following his maxims of choice and improvement, either in whole or in part, and who are endeavouring to confirm his opinions, or to shew, by example, wherein they think them imperfect, will continue to render service to their country. Such men are considered with particular regard by this Society. From the different reports, written and verbal, which in various ways have come under the Society's notice, the main question seems yet undetermined, Whether the Dishley race of *best* sheep (long and coarse-wooled, short in the legs, short and full in the body, small in the bone, said to be adapted to fatten soonest and most profitably, on the most valuable parts, and being lightest in the parts of least value) are, or are not, on the whole, that description of sheep most to be recommended for *all situations*? Or, rather, though it be generally allowed that they have advantages, which recommend them as valuable in many situations,—yet, for *some* districts, and with a view to the produce of various kinds of fine wool, for particular manufactures, it be not probable

probable that no one sort, or mixture of sorts, can become generally and exclusively recommended? The main points, however, characteristick of the Dishley produce, are undoubtedly considered, and increasingly so, as those points which should be more generally regarded than they have been: and it is now held that no race or mixture of sheep (whatever the value of their wool) which have not the chief of those points, can be recommended as worthy of choice. The South-Down—as one of the most distinct of the races, and as being nimble on the foot, yet gentle in pasture, hardy in feeding, of middle size, adapted to fatten expeditiously in almost any situation, producing mutton of firm texture and fine flavour, and carrying a valuable wool for the clothing manufacture,—are growing in repute; while those, of whatever name, which are of large size, heavy in horn, bone, and offal, however noble in appearance when fat, or however abounding with tallow on the kidney, are deservedly considered as less worthy of propagation,—even in folding districts, or in the richest pastures, where they were once the pride of their owners. Calculations of profit on sheep seem of late years to have been made more accurately *by the acre*; or on the whole *year's stock*, than by the *single head*. The latter seems to have been heretofore no uncommon mode of calculating the sheep profits on a farm; but obviously liable to great deception. It seems to be now generally allowed, that a given quantity of food, consumed by small sheep, pays much more than by large ones: that a succession of sufficiently fat mutton is more easily and regularly produced from such small sheep; that the consumer is better pleased; and that on the whole, the quantity of *wools* most in demand is increased. It may be agreeable to many gentlemen to hear, that from experi-
ments

ments repeatedly made, by means of the Spanish rams lately presented to this Society by the King, the wool of those horned races, with which the Spanish is most adapted to mix, has been materially improved by the mixture, without any appearance of declension in the quality, by several years repetition of breeding; and that no complaint of injury in the carcase has yet been made to the Society:—but on the contrary several breeders have given their opinion that the shape is improved. Such are the Society's information, and present sentiments on the subject of *sheep*.

Of *Horned Cattle*, the best for general stock, the Society has heard much; has been gratified with exhibitions of several lots; and has seen cause to distinguish some by pecuniary approbation. But the best for *general stock, in all situations*, it is not yet prepared to name with full confidence. It seems, however, not probable that a desideratum in this matter will so long remain as on the subject of sheep. One material consideration under this head is obvious, i. e. that the covering of the animal is far less an object of attention than in the sheep. Thus, the most common characteristic distinction is by the *horn*: accordingly *long-horned*, *short-horned*, and *no-horned*, are the terms we hear most commonly used to denote, of late, the different kinds of neat cattle. And the most common question of preference is, whether the long-horned, or the short-horned, be the best race? Indeterminate enough are these descriptions—but most farmers are very well acquainted with others, which convey more distinct ideas—as the Lincolnshire, the Holderness, the Herefordshire, the Glamorganshire, the Pembrokeshire, the Devonshire, the Alderney, &c. &c. All these, and several other descriptions of Welsh and Northern animals, have their respective advocates for a supposed superior value in the
production.

production of milk, for excellence of fattening, and for labour in draught. It will be readily supposed difficult for any local Society to draw an absolute conclusion from the various accounts received, and opinions given, under this head; and consequently to recommend any particular description of beasts as positively preferable to all others for *general stock*. The famous BAKEWELL's selection, or mixed breed, under the general name of *long-horned*, the publick are pretty well acquainted with; and the disciples of that ingenious man are not warring to follow him in their decided preference of that kind of stock to all others. The question which this Society has been most accustomed to hear agitated, is, respecting the comparative merits of that famous produce, and the genuine unmixed race from the North of Devonshire; the latter not, indeed, remarkable for shortness of horn, (for it is rather of a middle-size) but clean and delicate, corresponding with the general description of the animal itself. This last-mentioned race of neat-cattle, small but dense in the bone, slender in the head and neck, having a sleek skin, and a glossy red colour, and generally impressing the common observer with the idea of a beautiful symmetry, is now considered as growing in estimation. In many parts of England they have been long known, and partially prized, both in a fat state, and for fattening stock; but particularly valued in the Western counties. Samples of them, both male and female, fat and lean, have been repeatedly exhibited to this Society, and have obtained a high degree of its approbation.

The enormous prices which the celebrated Dishley stock has obtained, having of late brought forward the Devonshire advocates for *their* produce, they seem to have pleaded, with success, the valuable properties and general usefulness
of

of their favourite stock. And disclaiming (as such a Society as this should ever do) all partial prejudices, it seems probable at present, to the majority of the most skilful members, that they shall continue to see such cause of preference, as to recommend a more general attention of the publick to the native excellence of the North-Devon cattle. At a time when the scarcity of grain, and consequently the unnecessary consumption of corn by horses, have been much the subject of remark, the more general introduction of oxen into the labour of husbandry is considered as very particularly desirable. And from the fullest proof of the value of Devonshire oxen, in hard labour, particularly at the plough, this Society has no hesitation in urging the use of them. They have great strength in proportion to their size, possessing much density of bone and muscle;—their step is quick, and their durability remarkable.* They will live better on hard fare than most other sorts; and when they have worked hard for several years, will fatten in a shorter time than most of the known breeds; produce the finest-grained beef, and meet a ready sale from the butcher at the first, or at a superior price.

No subject has continued more to occupy the attention of the publick, under the head of agricultural improvements, than *an alteration in the state of Tithes*. None seems to be more the cause of dissatisfaction among the active improvers of land, country gentlemen, yeomen, and

* Several of the most considerable gentlemen farmers in this Society have been long in the habit of using these oxen with the double-coulted plough. In a very stiff soil six of them are used, two abreast; but in lighter soils, and in after-ploughings, four will easily plough two acres in a day, with that kind of plough.

farmers, who frequent the rooms of this Society; and with whom, of course, the Secretary and the Members of its Committees have frequent intercourse. All agree in lamenting that, because the legislature originally thought proper to sanction that particular mode of subsistence, for the ministers of a national church; the consequence should not only be a continued check on improvements, but a rankling animosity in the minds of farmers against the claimants, to the injury of a national worship: That the original plan, having become long since altered, by the gradual sale, gift, and lay-possession of the greater part of the tithes of the kingdom, the burden should not be suffered to remain from age to age, where every plea of clerical support is out of the question;—and where the whole fruit is evil, by the personal interest of one lay-man being opposed against that of another; while the nation, instead of the possibility of profiting at all by the contest, must be doomed to suffer, till the embarrassment shall be removed. • • • • •

Under these common views of the subject, many are of opinion that an alteration in the mode of tithing, so far as concerns the clergy, might take place, on the principles of several writers in these volumes, or, in other words, by a corn rent. Others have preferred, on account of greater simplicity, a pound rate on the rent of the land; the legislature to prescribe a proper test of truth, as to the reality of the rents, to which test the claimants in all cases of suspicion may have recourse. Others have proposed that agricultural societies, and other bodies, should apply to parliament for obtaining an act to compel the sale and purchase of all the tithes in the kingdom, on a fair valuation by a jury; and out of the produce of the appropriate tithes, the establishment of a fund, under the guarantee of government, for the more equal and

and comfortable subsistence of the clergy,—or (if such security be more desirable) for the purchasing of lands, the income of which to become the property of the church for ever. But the greater number seem decidedly of opinion, that, at any rate, an act for procuring the total valuation and sale of the *unappropriated* tithes (by far the greatest in amount, and supposed to be the most rigidly claimed) should be earnestly applied for, as a measure of relief to the country, and of publick justice, carrying its own evidence of expedience, both from general facts, and the recent alarm of national scarcity. To these calls for the adoption of so provident a measure, has been added the political one, of giving scope to population by an increase of the necessaries of life, and consequently adding strength to an insulated country, whose natural advantages have been the frequent objects of foreign envy and hostility.

The practicability of doing this, with convenience to all parties, has been, and continues to be, confidently maintained. The lay-proprietor receiving in money the fair value of his tithe estate, to be settled by a competent jury, impartially chosen and solemnly impannelled, cannot be said to be injured. The principle of compelling the owner of property to part with it, by such equitable valuation, for the good of the whole, stands sanctioned by numerous acts of parliament, and is proceeded on every day, in the business of inclosures, roads, canals, publick buildings, &c. &c. And an opposition to the principle, in those matters, would be deemed a preference of personal convenience, at the positive expence of the publick good.

With regard to the owners of titheable lands, if it should be objected, that some of them might find it inconvenient to pay down the price of the tithes in fee,—*that*, it has been
said,

said, must be granted: But the great increase in the value of lands exempted from tithes, arising both from the exemption and from the probable improvements to be made, will generally furnish the means of borrowing the money, where it is wanted;—and few men would think it an evil to be obliged to borrow money, even as high as at legal interest, to get rid of the incumbrance of tithes.

But, at all events, say the advocates for this measure, an act should be granted to *empower* all owners of lands paying tithes to lay-impropriators, to call a jury, and settle the value, and the sale, whenever such land-owners shall be desirous so to do.—A reasonable prior notice of such intention, in any land-owner, would of course be prescribed by law.—Such open and deliberate transactions would preclude the idea of difficulty on either side; and it may be readily conceived, that the progress of such voluntary adjustments through the country, and all the consequent benefits of them, would be no tardy work.—But for a more copious collection of opinions on the subject of tithes, the reader is referred to the *extracts*, which it has been thought proper to insert in this volume, from the numerous County Surveys which have been made under the direction of the Board of Agriculture.

Such, among other, perhaps equally useful, though of less popular description, are the objects which have engaged the attention of this Society since its last publication. And it is hoped that such labours, and the following fruits of the Society's correspondence, will be accepted and approved by the publick, for whose welfare the original plan of this institution thus continues to be pursued.

• Finally;

Finally; for the further promotion of useful knowledge, the correspondence of ingenious practical Farmers, and publick-spirited Gentlemen, and the subscriptions of the Affluent, wherever situated, who wish well to the domestick interests of their country, are respectfully solicited.

WM. MATTHEWS, Secretary.

Bath, Nov. 1, 1796.

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As every information, founded on accurate experiments, on the cultivation of Potatoes, is particularly valuable to the publick; the following, which was sent in after the last sheet of the volume was finished, is here inserted, for the early benefit of Potatoe Planters.

Experiment on the Culture of Potatoes.

[In a Letter to the Secretary.]

SIR,

I Send you an account of an experiment, which I have made this year with a view to ascertain, as nearly as one experiment well can do, the object of the Society's Premium on the planting of potatoes.

A piece of ground being prepared, rather more than an acre, nearly of an uniform quality, and all unmanured; it was divided into four equal parts: of which, one was appropriated to *setts* or *cuttings*, in the usual way; one to *eyes* scooped with an instrument made for the purpose; one to *whole potatoes* of a moderate size, rather small than otherwise; and one to *shoots*.

An equal quantity of potatoes was destined to each plot; and I endeavoured to apportion the distances in such a manner as to crop the whole plot with the seed destined for it. In the first three plots a few potatoes only were wanted to finish each plot, rather the most in that of the cuttings or setts. For the fourth plot the given quantity was deposited to produce shoots, but they were by no means sufficient, as I shall explain hereafter. The distances of the rows as follow:

Cuttings or Setts—about 2 feet distant; in rows about 12 inches.

Eyes - - — about 18 in. distant; in rows about 6 in.

Whole Potatoes — about 2 $\frac{1}{2}$ feet distant; in rows about 18 in.

Shoots - - — about 18 in. distant; in rows about 9 in.

All were hoed and treated in all respects alike. In the plots of whole potatoes, and cuttings, somewhat more than there

three cwt. of seed was consumed in each. In that of the eyes, about 75 lbs. In that of the shoots no seed was consumed, though perhaps rendered of less value.

The produce was as follows:

	<i>Baskets</i>	<i>Sacks</i>		<i>Baskets</i>	<i>Sacks</i>
Whole potatoes	47 or	15 $\frac{2}{3}$	Cuttings or setts	33 or	11
Shoots - - -	37 $\frac{1}{2}$	12 $\frac{1}{2}$	Scooped eyes -	27	9

The soil was a thin, sandy, freestone gritt, stoney, and without manure; the previous crop turnip cabbages, also without manure.

I must here state the method in which I procured the shoots for this experiment.

I had tried the method so warmly recommended by the Dublin Society, and the Rev. Mr. MAUNSELL, but without success. The shoots taken from the potatoe pits, and cut in proper lengths, either died entirely, or came up very weakly, and produced only very small bulbs: nor have I met with one person, of the many who have tried this method within my knowledge, that has succeeded. This induced me to try the effect of shoots that had become green and strong by getting above ground. Accordingly, last year I laid a quantity of potatoes in a trench dug for the purpose, putting a little litter in the bottom, placing the potatoes thinly, and covering them with litter and mould upon that to the thickness of three or four inches. As soon as the shoots got three or four inches above the surface of the ground, I had them transplanted into ground ready prepared to receive them. The plantation was extremely luxuriant the whole summer, and the produce good; but the bulbs much larger than those planted in the usual way. This method of procuring shoots I adopted this year; and a judgment may be formed of its success, by comparing the produce of that plot with that of the others; and attending to the remarks I shall presently make upon it.

Remarks

Remarks on the Experiment above stated.

The plot with *setts* or *cuttings* laboured under some disadvantage. Being the uppermost piece in the field, and having a high hedge of my neighbour's to the south-east, the land was visibly poorer, and the potatoes of an inferior size for some yards below the hedge, to what they were at a greater distance from it. Add to which, the drills being all struck with a plough for planting, the two corners which the plough could not touch, and which were intended to have been planted with a spade, were unfortunately overlooked and left uncropped. I calculate the deficiency from these causes at about four or five baskets.

The plot with *shoots* laboured under still greater disadvantages. The time of planting being of course later than that of the other sorts, the season being very dry, and the ground very hard and stoney, the workmen had a difficult matter to put in the shoots; which, however, they did in part with spades, and in my absence from home. On my return I ordered a plough into the field, and placing the shoots in every other furrow at about nine inches distance, with their green tops above ground, the plantation was finished in an easy and expeditious manner.

Another disadvantage to this plot was, that I was not well aware of the quantity of potatoes necessary to be laid in the ground for my purpose. The first crop was only sufficient for about half the plot: of course we were obliged to wait the growth of a second crop; which delayed the planting so long, that they were exposed to the drought before they had taken good root, and hence ripened late: the other shoots ripened in good season. Besides, the two headlands being obliged to be put in with a spade, as well as a spot which, on account of an adjoining crop, we could not come at with a plough, and all planted with shoots of a third growth, the second not producing sufficient to finish the whole, produced, from the very late and dry season in
which

which they were planted, scarcely any potatoes at all. Had these spots been as productive as the rest of the plot, the produce would have equalled at least in *quantity*, and far excelled in quality and value, that of the *whole* potatoes; as is evident from the following statement:

No. 1. Whole potatoes—size unequal—at least one-fourth unmarketable.

No. 2. Shoots—size nearly uniform, mostly large—not one-thirtieth part unmarketable.

No. 3. Setts or cuttings—size less uniform—about one-tenth unmarketable.

No. 4. Scooped eyes—few large—nearly one-third unmarketable.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
No. 1. Twelve sacks at 5s. and four at 2s. is	3	8	0
2. Twelve sacks at 5s. and one-half at 1s.	3	1	0
3. Ten sacks at 5s. and one at 2s. - - -	2	12	0
4. Six sacks at 5s. and three at 2s. - - -	1	16	0

The result of this experiment was nearly such as I should have been led to expect. I think it may be safely laid down that, of the shoots produced by a potatoe, some will be large and strong, others weak and small, the latter much exceeding the former; and that the strong shoots have a tendency to produce large bulbs, the weak ones small bulbs. Also, that when the shoot is got above ground, and is furnished with lateral fibres, the parent stock from whence it sprung is no longer necessary to it; but previous to that state, that it is absolutely necessary to its vigorous growth. Also, that those bulbs only will grow to their full natural size, which can have an opportunity of drawing from surrounding soil as much nutriment as is necessary to perfect their growth.—

Apply these principles to the different modes of planting.

1st. Whole potatoes produce a great many shoots, some strong, some weak; but altogether appearing very vigorous having the full benefit of the parent stock in their infancy; each produce their respective bulbs, but neither can come to full perfection, because, being very numerous, they cannot get

get sufficient nutriment from the soil to bring them to that state. Hence a considerable crop in number, luxuriant in appearance, but very unequal in size and quality.

2dly. *Cuttings or setts* produce only three or four shoots, part strong, part weak; not so luxuriant upon the whole as in the former case, having less benefit of the parent stock whilst young, but not interfering so much with each other; and the quantity of surrounding nutriment being more nearly proportioned to their wants, each sort comes nearer to perfection than in the case of *whole potatoes*, though the produce is not so numerous. Hence a crop inferior to the whole potatoes in quantity and luxuriance of appearance, but of better quality.

3dly. *Scooped eyes* produce only one stem each: the weak eyes, weak stems; the strong, strong ones; *having but little assistance from the parent stock in their infancy*, they appear very weak and dwindling at first, but afterwards improve much in luxuriance. The weak eyes usually exceeding the strong ones in number, a few only come up moderately strong, many very weak, and some not at all. Hence a crop inferior to the two former, in luxuriance, quantity, and quality.

4thly. The strongest shoots usually arising first from the potatoe, the *plantation of shoots* will chiefly consist of *strong ones*, those being first ready to take off: and having all the benefit of the parent stock, as long as it is necessary to it, and as a single stem having no other to interfere with it, its bulbs come to the greatest perfection. Hence a crop, luxuriant in appearance, considerable in quantity, and complete in quality.

If this reasoning be just, (and it is certainly confirmed by the result of the experiment above stated) the method of planting by shoots, procured as I have described above, and well managed, may prove a most valuable one. At all events, I cannot but recommend it to the Society to promote further trials, with a view to ascertain a point of such importance. Plantations of potatoes, made in this way, appear to possess

possess all the advantages they are capable of, (those of soil, manure, and culture, which are common to all methods, excepted.) None but the stronger shoots are employed; they have the benefit of the parent stock as long as it is necessary; when planted they are unincumbered by neighbouring shoots, and their bulbs have an opportunity of coming to their full natural size and perfection.

The reasoning I have here adopted seems likewise to receive some confirmation from an observation. I had very lately an opportunity of reading in an essay presented to this Society, viz. The productiveness of potatoes does not appear to arise so much from the quantity or quality of the seed planted, as from each plant having just as many vigorous growths (or shoots) as the surrounding soil is capable of bringing to perfection.

I am, Sir, your humble servant,

Twerton, Nov. 3, 1796.

THO. BROUGHTON.

To those who may be disposed to try the method of planting by shoots, the following process is recommended:—

As early in March as the season will permit, let a trench or trenches be dug in a dry and sheltered spot; let a little litter be laid thinly in the bottom, and the potatoes placed upon it, close to each other, but only *one* in thickness;—the proportion will probably be from 10 to 12 sacks per acre. Let some litter be laid thinly over them, and a little earth upon that. As soon as the potatoe shoots are two or three inches above ground, let a person raise them out of the trench with a three-pronged fork, and another take off, *close to the potatoes*, such shoots as are strong, and about six inches in length. These may be either planted out with a setting pin, or placed in the furrows after a plough; care being taken in both cases that an inch or two of the shoot be above ground. If planted in a field, the latter is the preferable method; and they should then be placed in every other furrow, and about nine inches distant in the rows.

Should there be reason to expect that more shoots may be wanted than are fit to take off the first time, the Potatoes may be returned into the trench, and they will produce an abundant crop of shoots for a second planting.

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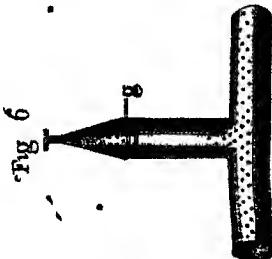
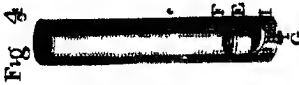
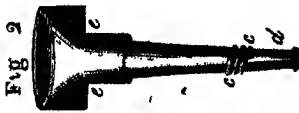


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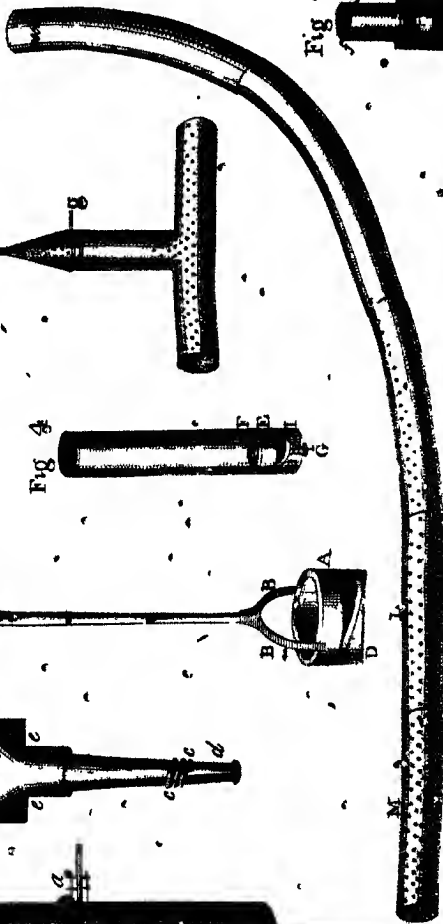


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LETTERS

TO THE

BATH AND WEST OF ENGLAND AGRICULTURE SOCIETY.

ARTICLE I.

Disquisitions concerning the different varieties of Wool-bearing ANIMALS, and other particulars connected with that subject.

[By JAMES ANDERSON, L.L. D. F. R. S.]

IT has been hitherto in general believed, that the Sheep is universally a wool-bearing animal, and that there is no other creature upon the globe that carries wool, in the strict and proper sense of the word, but sheep alone. But there is now reason to doubt if either of these propositions be strictly true.

Among other good effects that will result from the researches of the society instituted for the improvement of British wool, we have already become acquainted with the nature and distinguishing peculiarities of a great diversity of *varieties* of sheep, and other animals that were not before known in Europe. It is to that source we owe an account of the different varieties or breeds of sheep, that have been
VOL. VIII. discovered

discovered in the Russian dominions, by the learned Dr. Pallas, so well known in the republick of letters, by his many ingenious works in natural history, and other branches of science; a translation of which, into English, was lately published in London. By the same means we have become now perfectly well acquainted with the Spanish sheep, and its distinguishable peculiarities; as well as with a great many other varieties of the sheep from various parts of Asia, differing from each other in a much greater degree than ever we suspected before in Europe was possible.

It would take up too much of the time of the Society, were I to enumerate, in detail, the individual varieties that might be specified. I shall here only briefly state, that all of them may be reduced to one or other of the three following classes, or the mongrel breeds resulting from an intermixture with each other, viz.

CLASS FIRST.

WOOL-BEARING SHEEP, *properly so called.*

THIS class comprehends a great many of the varieties of sheep found in Britain, and throughout the greatest part of Europe. Sheep referable to this class are also found in Asiatic Russia, in Africa, at the Cape of Good-Hope, and in various parts of India.

Among most of the varieties of this class, unless where it has been purified by a careful selection con-

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tinued for many years, there is found intermixed with the wool, in different proportions, a kind of short, opaque, brittle, unelastick hair, usually of a dead white or chalky colour, which is well known to manufacturers, and is easily distinguishable from other hair. It is known by the name of *stitchel* hair in some places. In other places, it is called *kimps*; and probably it has many other local names with which I am unacquainted. This kind of hair does not loosen from the skin at the same time with the wool, and may thus be, in some measure, separated from it among some of the purer wool-bearing breeds. I have reason to believe, though I am not absolutely certain of the fact, that this kind of hair is peculiar to the sheep of this class, and is not to be found in either of the other two, unless where they participate with this one in a mongrel breed.

CLASS SECOND:

HAIR-BEARING SHEEP, -

Whose pile is long in the staple, and of a quality that admits of being employed in many manufactures, nearly for the same purposes as wool.

SHEEP referable to this class have been usually confounded with the former, inasmuch that they have almost entirely escaped the notice of naturalists and others. The pure breeds of this sort are scarcely any where to be found among *manufacturing* nations; but they are reared, in preference to

the wool-bearing sort, among the Russians and other northern nations, where the skins of sheep, with the fleece on, are used for clothing, as they are found to be much more durable. There are, however, a great many varieties among the breeds of sheep in this country, which are mongrels between this class and the former. Here, however, as in most cases where accurate distinctions are wanted, although it seems easy at first sight to distinguish wool from hair by the crispiness of the former, in consequence of which, it shrinks in length so as to require to be stretched out before it can be accurately measured, which is not the case with hair in general, yet this is found to afford a rule too vague for accurate discrimination. The following characteristics may, I think, be sufficiently accurate to be relied on.

1st. Wool, like the body hair of most animals, is an annual production, springing from the skin of an animal. It consists of a great number of distinct filaments that grow more or less close to one another in different breeds, but which spring out of the skin about the same time, like corn from a cultivated field; advance nearly with an equal rapidity, till they have attained their full perfection of growth, when they loosen from the skin nearly at the same period, (when a new crop springs up below) and fall off in large parcels all at once, so as to leave the body, at one period, nearly bare, or covered only with a short coat of wool. Hairs, on the other hand,

hand, loosen from the skin separately, and at remote periods from each other, and, unless where they are accidentally matted together, so as to entangle the loose hairs among those that are fast; they fall off individually one by one, and are succeeded by other individual hairs to supply their place. And as this process goes on through the greatest part of the year, the length of the coat of *hair*-bearing animals, if left to themselves, is not nearly so different, at different seasons of the year, as that of wool-bearing animals.

2dly. A filament of wool has no determinate proportional thickness in its different parts, but is variable in all possible proportions. Sometimes the root end is thicker than the points; sometimes, and indeed for the most part, in this climate, the points are thicker than the roots; sometimes, the middle is thicker than either end; sometimes, it is quite the reverse; at sometimes, the variation of thickness is great, and extremely perceptible; at other times, the filament is of an equal thickness throughout all its parts. These variations, in regard to the thickness of the different parts of a filament of wool, have been proved, by experiment, to depend upon the degree of heat or cold that has acted upon the animal at the time the filament was in its state of growth; that part of it which grew during the influence of a continuation of warm weather, being always thicker than that part of it which grew during cold weather;

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the difference of size varying with the difference of temperature in all proportions, the size of the filament continuing the same only where the animal has been kept in an equal temperature of heat during the whole period of its growth.

Hairs, on the contrary, seem to have always a determinate shape and relative proportions, under whatever circumstances they shall have been produced—one species of hairs being of one shape and proportion, and another kind of another shape. In general, (and with no exception that I know of) the body-hairs of animals are thickest at the root, and taper sensibly towards the point, which is directly the reverse with all wool of grown sheep in this country.

By these two criteria, wool may be, in general, distinguished from hair, where they are entirely uncompounded, without difficulty.* But as all the different varieties of sheep breed readily with each other, and produce a mongrel race, in which the discriminative qualities of the parents are blended together, it necessarily follows, that where the mongrel breed is produced between a wool and a hair-bearing race,* it will afford a fleece that can neither be distinctly characterised as hair nor as wool, but will participate of the qualities of both. If this mongrel shall mix again with a wool-bearing race, the fleece of the descendant will approach nearer to wool; if with a hair-bearing race, nearer to hair;
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and so on they may be blended in infinitum; by which means, in time, the distinctive characteristics of hair and wool may be entirely lost, and fleeces be produced that are neither the one nor the other. This seems to be precisely the case with most of the breeds of sheep in Britain at this day; and we must go, in some measure, out of the Island to recover the genuine breeds; but which, if attended to, will enable us to account for various phenomena that have puzzled many intelligent men.

The most uncontaminated breed of wool-bearing sheep I have as yet met with, is the Shetland breed, and there the wool rises so entirely from the skin, about the beginning of June, as to render the shearing of their sheep unnecessary. It may be plucked off at that time without occasioning to the animal the smallest uneasiness, as it will fall off of itself if not taken away; the young fleece springing up beneath it like a young thorn fleece. The same phenomenon is observable in all the breeds of sheep in the northern parts of Scotland, where the proper time for shearing is always indicated by nature, and must be attended to. For although these sheep have got such an intermixture with the hair-bearing race as not to allow it to loosen quite so entirely as that of the Shetland breed; yet it is loosened to such a degree, that if the sheep are shorn too soon, and before the wool is properly *risen*, as the phrase there is, it is difficult to pass the sheers through it, and
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the skin is left very bare, the young wool not being yet grown. On the other hand, if that shearing be too long delayed, the young wool has grown to such a length as to entangle the sheers in it, so as to cut off a part of it, which is both troublesome and useless. But when the wool is risen to its proper state, the sheers slide over the young fleece, and cut off the few remaining hairs of the old fleece with the utmost ease, so that the sheep discovers no marks of being shorn, and looks like a lamb in that respect.

It would seem that there is a much greater proportion of the hair-bearing race among the breeds of sheep in the Southern parts of the Island; for I observe that Mr. LISLE, who lived in Hampshire, and was an attentive observer, though he had heard of this young wool under the name of *rowety-wool*, had never seen it. It is well known in Scotland, that this phenomenon does not depend on the leanness of wool-bearing sheep, but takes place among those that are in the best condition soonest.*

* I find that most people have an idea that the phenomenon of young wool, rising at the bottom of the fleece of sheep before shearing, and all the peculiarities here mentioned, are entirely occasioned by a check the sheep have received from a want of food in the winter: to this opinion I cannot accede, for the reason after mentioned, though I know well that when a sheep has sustained a great stress of weather during winter, it does happen that the old fleece sometimes separates prematurely from the skin; but in that case the fleece becomes matted, and assumes an appearance extremely different from the natural
and

The purest of the hair-bearing sheep I have seen, were some fleeces that were sent to me from the Baltic, which were as evidently hair as the fleece of a goat, though finer and softer. The Russians prefer this breed of sheep, because the fleece, when at its full length, adheres so much more firmly to the skin than wool does, that it lasts much longer when made into clothing than the other; for which reason, a wool-bearing sheep among them is a great rarity.

Among the sheep referable to this class, there are some breeds which afford a small quantity of a very fine and soft wool underneath the hair, of which the *Argali* of PALLAS is a noted example; but the greatest part of the varieties we know have none of this. I have never heard of an unadulterated breed of this kind that had stichel hair among the fleece, though it is often found among the mongrel breeds between this and the former. Neither have I ever heard of a finer kind of wool being found at the bottom of the fleece of any of the wool-bearing breeds.

The very long wool of Lincolnshire, which I have examined with care, appears to be from a mongrel

and healthy rising above alluded to. In this last case, the wool does not separate in the early part of the spring as where it is matted; but it adheres to it till the month of June at least, and even then in a gradual manner, as the young fleece begins to rise, and always soonest upon the sheep in the best condition, which, on that account, are often shorn ten days or a fortnight sooner than the others.

race,

race, very nearly allied to this class, with a small blend of wool in it, and is of a harder feel than some of the pure hairy breeds, some of which are tolerably fine and soft, and very tough and durable in work, and have a fine goffy filky-like appearance. I have had wool, of the genuine wool-bearing breed of sheep, that measured $17\frac{1}{2}$ inches in length, which was extremely fine and soft, and nothing resembling that husky kind of hair-wool in Lincolnshire.

CLASS THIRD.

SHEEP that carry SHORT THICK HAIR, which in no respect resembles wool of any sort.

OF this variety of the sheep species we have no breeds in Britain; but that such sheep do exist, we have the clearest proofs. So little are they known indeed in this country, and so little is it suspected here that such an animal exists, that I was not a little surprised when I first saw one of this kind, and therefore examined it with a good deal of attention. This creature was on board a Danish East-India ship that put into Leith roads last season, and was bought, with several others of the same sort, as they assured me, in the island of Madagascar. It was a ram of a good size, and was covered all over with a thick coat of short thick stiff hairs, like that of a horse, but rather stronger in the pile and shorter. The colour was a fine brown, the hair lay close to the skin, and was very smooth and glossy, like the coat of a well-dressed horse

horse in fine order. They assured me that it had never had any other covering on it but what I saw, and that all its companions were of the same sort.

This fact threw the subject of sheep into a new point of view that I had never adverted to before, and enabled me to account for some phenomena respecting sheep that had puzzled me a good deal. In the account that Dr. PALLAS had given of the famous Boucharian lamb-skin furs, some of the peculiarities he mentioned appeared to me to be incompatible with the nature of wool, and much more nearly allied to that of hair. But as I had no idea that any sheep of this kind existed, I was perplexed about it, and could come to no decided opinion respecting it. Since then, I have had an opportunity of seeing a night-gown, lined with Boucharian lamb-skin fur, which, I find, consists of nothing else but *hair*, without the smallest intermixture of wool. It is somewhat longer than the Madagascar sheep's hair, softer, and gently waved by means of a little curl upon it, which gives to it the beautiful foliage-like appearance, for which these furs have been so much valued; so that this forms a second variety of this class of sheep.

While I am just writing, I have received a letter from Sir JOSEPH BANKS, bart. on this subject; who says, "I once imported three sheep from Spain, " which were as sleek and smooth as a horse, and " never, at any season, shewed the least sign of wool

or

“or down in the most minute quantity.” The fact then is incontestibly established, that sheep, which produce as little wool as horses, do exist; and perhaps they are much more common than we at present suspect. The Boucharian breed of sheep is kept in immense flocks over the extensive plains of Great Tartary. Since the above was written I have been assured that they have a breed of this kind of sheep in the island of Antigua.

A natural inference from these facts is, that since we find one class of animals, some breeds of which produce wool, and other breeds produce nothing but short hair in no respects resembling wool, may not a similar diversity take place in regard to other classes of animals? And although it should happen that the inhabitants of one country should be possessed only of the hair-bearing breed of creatures of that sort, like the Madagascarese sheep, and know nothing of any other sort; yet there is no reason, from that circumstance, to conclude that no other breed of that kind of creature exists. This train of reasoning being suggested, it roused the mind to attend to facts; and I had soon occasion to observe, that so far from having reason to be surprised at finding breeds of sheep so much diversified, as above set forth, there were innumerable well-known facts, which, if adverted to, would have led to the same conclusion.

For

For example: there is no man in Britain, who has not had occasion to observe as great a diversity in regard to the coat of dogs as of sheep.

1st. The smooth-haired dog; examples of which are the Italian greyhound, and Spanish pointer.

2^{dly}. The long-haired, soft, wavy-fleeced dog; as in the English spaniel, and Newfoundland dog.

3^{dly}. The wool-bearing dog, or, at least, the dog that carries a coat, which, for closeness, length, and softness, may be compared to wool, is very common. Some of them carrying an immense quantity of hair of a long lank quality, and others carrying it of a close curled texture, very like the fleece of many kinds of sheep. The fleece of these creatures must be shorn at the beginning of summer, to let them be comfortably cool; and I have seen it spun and worked into stockings, which could not be distinguished from wool.

N. B. There is a kind of fox-skin, in Siberia, that carries a fur exactly like *wool*, as I have been assured by a gentleman who lived long there. The Russian name of it, being literally translated, is, *the little dog's fur*.

The same diversity is observable in regard to goats: as,

1st. The smooth short-haired goat, very common.

2^{dly}. The long-haired shaggy goat, very common also. The hair of this kind of goat is usually very coarse; but underneath it, as in the long-haired breeds

breeds of sheep, there is a quantity of wool, of an exceeding fine quality, which may be separated from about the month of June, by combing. From this circumstance, it would seem that this wool, like the *wool* of the sheep, rises from the skin, and becomes loosened from it, while the hair still adheres firmly to it. Of the fineness and quality of this kind of wool, you may satisfy yourself, by examining the small shred of a little web that will accompany this, of that kind of wool, which was manufactured under my eye here last summer. There was as much of it as made three full-sized shawls and a waistcoat-piece, from whence the pattern sent was cut. The hair is silk, as there was too little materials to make of wool. These shawls were compared with the best India shawls that could be found in this place, and were deemed softer than any of them. The shawl wool in India is precisely of the same nature, and is obtained from the Thibet goat. I have examined some Thibet goats in this country, and find their hair rather longer and coarser than the common European goat, from which it differs little. If it was a fair specimen I saw, the *wool* was rather less abundant on these than on the common goat.

3dly. The wool-bearing goat, for so I think the Angora goat may be called, whose hair is as fine, soft, and as fit for work, as almost any wool; but whether it *rises* like wool, or is in this respect like hair, I have had no opportunity of observing. A specimen

specimen of Angora goats-hair, produced in Britain, will accompany this.

Whether there will ever be discovered the same diversity of hogs, I cannot tell; but we already are acquainted in Europe with something analogous to the two first-mentioned breeds of sheep, viz.

1st. The smooth short-haired Chinese breed. The Jamaica breed of hogs belongs also to this class.

2^{dly}. The long-haired breed, having wool under its long bristles; of this kind is the small breed of hogs found in Orkney and the Shetland Isles. Its bristles are very long and shaggy, and under them is found a very abundant quantity of wool, which is soft; but its peculiar qualities have not been as yet sufficiently investigated. I have, as yet, heard of no breed of hogs that carries wool only.

Hence it appears, that the diversity of animals that carry wool is much greater than has hitherto been in general suspected; nor can we at present say, with any degree of certainty, that there may not still exist, in some corner of the globe, one or more of every species of domestick animals that do not carry wool with us, that we are now in the custom of rearing, which may also carry wool, as well as some varieties of the sheep. And since it is well known, that the inhabitants of Europe have derived great advantages from selecting the wool-bearing breeds of sheep, and rearing them in place of the smooth-haired sort; it is equally certain, that, could

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we discover any varieties of the other domestick animals of the smooth-haired kinds that we have been accustomed to rear, which should afford *wool* as the sheep does, the benefit we might derive from substituting these wool-bearing breeds, instead of those hairy sorts we now propagate, would be very great, if their qualities in other respects be nearly the same.

Of all the varieties of domestick animals we have been accustomed to rear in Europe, next to the sheep, the bullock is the most valuable. We, it is true, like the inhabitants of Madagascar with regard to sheep, have been hitherto in the custom of rearing the smooth-haired bullock only; and though, perhaps, like the inhabitants of Madagascar, we may have accidentally heard that there are some varieties of this class of animals that carry something like wool in other parts of the world; yet, as these have never come to our door, and presented themselves to us, we either doubt if such animals do exist, or conclude they would not thrive with us, and therefore sit still contented with what we have, without making any efforts to better ourselves. Is it not a well-known fact, that we have continued for more than a hundred years past to import wool from Spain in great quantities every year, without ever once attempting to rear the breed of sheep that produced it, though they were in a manner at our door? And is it not also known, that instead of making a fair experiment

experiment to ascertain with certainty whether that wool could be produced here or not. Writers have been squabbling with each other about the possibility of a thing which could never be proved *pro* or *con* by reasoning, but by fair experiment only. And is it not also a fact, that, although it be now proved to demonstration, by repeated experiment, that the wool of sheep brought from Spain, does not degenerate in Britain, there has been till this hour no attempt made to obtain a single individual of the *finest* breed of sheep from Spain. And is it not also a fact, that because those sheep that have been brought over from Spain at random, have not been so fine in the carcase as some of the selected and improved breeds of sheep in Britain, that different persons are still disputing about the possibility of having sheep with a good carcase from Spain, as if a fact of this sort could be ascertained without accurate trial and experiment? Thus do we sit in our elbow-chairs, and argue, without data, till we reason ourselves into a habit of indolence and inattention, that makes us remain contented with the dregs only of what might easily be within our reach. To men in these circumstances the words of the poet may be applied,

O leaden-hearted men, to be in love with death!

It is most certain, that the person who ventures to rouse the attention of men to the investigation of facts which they have not been accustomed to

take notice of, must inevitably expose himself to the sneer of ignorance; but that is of little consequence, if it shall chance to throw a single ray of light upon a subject that has been hitherto involved in darkness.

That there are nearly an equal diversity of breeds of cattle as of sheep, scarcely admits of a doubt, of which the following facts are proofs.

1st. The short smooth-haired breeds. Of these, the shortest I have seen, is a bull of the Zebu kind, that was lately exhibited in Edinburgh as a show. His hair did not exceed half an inch in length, and was very close, firm, and elastick. There are many breeds of cattle in Britain, the Holderneffe in particular, the hair of which is short and very smooth.

2^{dly}. The long soft wavy-haired breeds. Of these, the Lancashire cattle are a good example; and many of the Highland breeds, some of which have manes like horses.

3^{dly}. The long soft wool-like bearing breed, of which the buffaloe, or rather bison, of Louisiana is the chief. The hair of this animal is said to resemble clothing wool, in length, in thickness, and in closeness; a small specimen of this wool is inclosed, which I received from Sir Joseph Banks, bart. But as the creature has never yet been domesticated, or subjected to particular observation, by men whose judgment could be relied upon, our notions of it are but very imperfect. I do not hear that there are any long hairs upon this breed of cattle.

4^{thly}. The

4thly. The long-haired wool-bearing breeds. Belonging to this class there are three varieties obscurely known, viz.

1st. The *Sarlue*, by some naturalists called the grunting ox, an animal of the Southern Tartary, which is not yet sufficiently known. The fleece of this creature is said to be thick and long, falling down below its knees, and of a very fine quality.

2dly. The Chittigong cow, of the higher Hindostan, which is described nearly in the same terms.—Its hair, or wool, is much esteemed by the natives, and is applied by them to various purposes.

3dly. The Musk ox, of Hudson's-Bay. This animal is much better known to me than the former, as I had the description from a gentleman in Edinburgh who lived many years in Hudson's-Bay, and who has seen thousands of them, dead and alive. The whole body of this creature, which is as large as a middle-sized ox with us, is covered over with a very close fleece of long, soft, flexible hair, of a fine quality, which might be employed in manufactures for many of the same purposes as wool; beneath that hair, and towards its roots, lies another coat of exceeding fine wool, which could be applied in fabrics of the finest quality. It has been spun and worked into gloves and stockings, which are said to be soft as silk. The buffaloe wool inclosed, I shewed to the gentleman, who said it was nothing like so fine as that of the musk-ox.

The flesh of this kind of ox is very fine, unless at the rutting season, when it acquires a musky flavour, from whence its name. Herds of many thousands of them are to be found up the country among the Esquimaux, but none of them have ever yet been domesticated. They do not seem to be either so wild or so ferocious as the wild breed of European cattle that are still kept in Whittingham's-park, Northumberland.

To shew what practical uses may be derived from these facts, I shall beg leave to subjoin a few farther observations on subjects connected with this, that have resulted, in some measure, from the enquiries which have been set on foot by the wool society.

1st. It is now ascertained, that all the varieties of sheep yet known do readily intercopulate with each other, and that the progeny is a prolifick animal capable of continuing the species; but that in respect to its characteristick qualities, it is a *mongrel* race, participating nearly alike of the qualities of both its parents. And as these mongrel breeds may be intermixed with other varieties *in infinitum*, it may in many cases happen that new mongrels may be produced, in which the distinguishing peculiarities of the original breeds may be blended in all possible proportions, and lost.

In like manner the varieties of dogs may be blended and lost, if no care be taken to preserve them; and so of cattle; at least we know for certain, that the
different

different European breeds may be so; and we have reason to believe, that the buffaloe, the zebu, and the other varieties that have not yet been tried in Europe, may be blended together.

2dly. The effects of climate and food, in altering the qualities of the *breed*, are found to be nothing; though the effect of these things upon the individual creature that is subjected to their influence, may in some cases be very perceptible. For example:

It has been shewn above, that the wool of *wool-bearing* sheep is affected by heat or cold; but this is nearly in the same manner as heat or cold affect the mercury in the thermometer. It is a momentary impulse, which ceases to operate the moment its influence is withdrawn; and the animal, which may have been made to undergo great variations of heat, returns to its former state as soon as its original temperature is restored. But even this variation seems to be felt only by the *wool-bearing* breeds; and is, besides, of much less powerful influence than has been usually supposed. Nor is there a single fact, that ever has been discovered, that gives the smallest countenance to the generally received opinion, that heat tends either to make the fleece thinner in pile, or to encourage the growth of hairs among it; far less that it operates, as M. BUFFON and his followers assert, in producing permanent changes on the descendants of the animals.

Heat likewise tends to accelerate the fattening of some animals to whom it is congenial; as the hog, to an astonishing degree.

Richness of pasture also tends to produce temporary changes. On the wool: there is reason to believe it tends to augment its length *in some degree*, though but a little; it adds to its softness and toughness; but in regard to coarseness or fineness, no fact ~~has~~ as yet been found to ascertain that it has any sensible effect, though I am aware that *opinions* are here as decisively adopted as if the facts had been fully ascertained. On the carcase: abundance of food is well known to augment the size of all animals to a certain degree, when compared with scanty feeding. A scarcity of food, approaching to the state of starvation, is also well known to render the wool, which grows at that period of starvation, brittle and unelastic.

3dly. The influence of breed, in propagating the qualities of the parent stock, or in altering the qualities of it at pleasure, by blending it with others, may be said to be all-powerful. There is not a single fact, that I have ever been able to meet with, properly ascertained, that tends to shew that the distinguishing peculiarities of any breed of animals can be sensibly changed in its essential characteristics, by any change of climate or any other circumstance, except an intermixture of breed alone; but innumerable facts may be found that ascertain the contrary.

The

The Persian and Arabian breeds of horses brought into Europe, are only changed by intercopulating with other breeds. The Chinese hogs may be continued for ages unchanged, if no crosses be permitted. These facts are notorious, and every other fact upon this subject tends to establish the same conclusion.

4thly. Although the same breed of animals appears not to be liable to be changed by climate or other extraneous causes, yet it is found by experience, that individuals may be found among every breed of animals, which, from circumstances that have hitherto eluded our observation, and which it therefore exceeds our power either to accelerate or retard, may be met with, which are, in some lesser circumstances, different from others, though they still possess the general characteristics of the parent breed. And so strong is the propensity of nature in all cases to produce its own kind, that if the individuals possessing these qualities, thus, as we would say, accidentally produced, whether beneficial or hurtful, be selected and put to breed with others that possess qualities somewhat of the same sort, it is found that the descendants of these selected animals will, in general, be possessed of the distinguishing peculiarity for which they were selected in an eminent degree; though among these also some individuals will be found to have less of it than others. And if these least approved individuals be banished from the selected stock; and those, both males and females, which possess the wished-for quality

quality in the most eminent degree, be put to breed together, the descendants of these will be still more improved; and by continuing this mode of selection for a great length of time, the improvement, as to this particular quality, may be carried to an indefinite height. In this way may be produced an improved breed; which, though agreeing in the general characteristics with the parent stock from which ~~it~~ was selected, may possess some peculiar qualities in a much higher degree than it does.

It is of much importance to the practical farmer to advert to this peculiarity in the economy of nature, because it puts it very much within his power to benefit himself by attention and care, in regard to circumstances that would otherwise seem to be entirely beyond his reach. For, were he to be persuaded that certain peculiarities he wishes to obtain, are necessarily dependant upon a temperature of climate he never can enjoy, or that certain bad qualities in the animals he breeds are inseparably dependant upon the nature of his pasture, which it exceeds his power to change, he must of necessity sit down contented with what he has, without a hope of improvement; but if, upon examining the facts above stated with attention, he shall find that the influence of breed is so powerful as is there stated, he will be at pains, in the first place, to look around him to see if he can discover any breed, possessing qualities, upon the whole, more valuable than his own, which

is found to subsist on pastures of a quality not better than his own; and when he has once found them, continue with uninterrupted attention to select the best in all respects, particularly those that thrive best among them, to breed from. This has been done by Mr. BAKEWELL, and those who have adopted his system, with such success, as not only to establish the principle for which I contend beyond a doubt, but also to give room for encouraging others to adopt a similar plan for improvements in other respects, than those that seem, hitherto, to have come within the compass of his plan.

5thly. There seems to be no reason for believing that any one peculiarity we may be in quest of, is necessarily connected with, or dependant upon, any other peculiarity in the animal creation. For example: The improvers of live stock in the present age hold it out to view, as a general principle, that a facility in fattening is invariably connected with certain peculiarities in shape; and of course they conclude, that, wherever these peculiarities of shape are to be found, the talent of fattening will be found also, and the reverse. This, I contend, is a false principle, and I venture to say, that when the facts shall come to be thoroughly investigated, their conclusion will be found to be erroneous; indeed it is in some degree departed from in *practice* already, though in theory the principle is still adopted without limitation. A few years ago, shortness of leg
was

was deemed a point indispenſibly neceſſary in a feeding beaſt, and it went the length of almoſt being deemed—the ſhorter the better: this is now no longer contended for. Many of the characteriſticks of the preſent day will, in like manner, gradually fall into diſuſe, as people come to open their eyes on this ſubject. The fact is, I have ſeen animals that had a powerful tendency to fatten, which were almoſt, in every reſpect, the reverse of the ſhape moſt 'highly eſteemed at preſent, and the contrary. And by referring every perſon who has had opportunities of obſerving *many breeds* of the ſame kind of animals, to his own experience, I have no doubt, but he will eaſily recollect inſtances of the ſame kind, or at leaſt, if his mind be unprejudiced, that he will ſoon have occaſion to obſerve it. To that experience then, whether paſt or to come, I refer on this occaſion.

One circumſtance, however, it is neceſſary here to advert to, viz. that as the breeds of animals, from which the ſelection was begun, were originally of very good kinds, and chanced at the ſame time to poſſeſs thoſe ſhapes that are now deemed ſo eſſentially requiſite; and as the improved breeds that have been ſelected from theſe are all found to poſſeſs theſe ſhapes; it is by no means an unnatural concluſion to infer, that theſe ſhapes are in ſome degree inſeparably connected
with

with the propensity to fatten easily. Had it chanced that equal pains had been bestowed upon selecting from another good breed that was differently shaped, the prejudice would have been equally strong in favour of that shape. But as the breeds that have been hitherto the object of selection, have got the start of all others in point of improvement, it is probable the prejudice in favour of their shape may long continue to prevail; nor do I wish it to be understood that I have any prejudice against the shapes recommended. Far from it, for I think them very beautiful—I only wish to say, that that circumstance is not *essentially* connected with the other; for as every error, when admitted as a truth, leads to unforeseen, and often pernicious consequences, though the opinion objected to may not be of much consequence in the particular instance now under consideration, its influence may be very unfavourable in regard to others. Allow me to add one further illustration on this head, before I put an end to this long paper.

If it be admitted, that a faculty of fattening easily be necessarily connected with certain peculiarities of shape, merely because it chances accidentally, as I will say, that these two peculiarities happen to be united in that breed of animals which has been brought forward to notice; we ought, by the same mode of reasoning, to infer,
that

that that quality of fattening easily, is as necessarily connected with coarseness of wool, or lightness of fleece, or any other useless or hurtful peculiarity, if it should so happen that the favourite breed chanced to have coarse wool, or a thin fleece, &c. The consequence of this conclusion would be, that every man who wished to improve the carcass of his sheep, would turn away from every breed of sheep that carried fine wool or a close fleece, as he now does from those breeds that have long legs, or what is deemed in other respects, improper shapes; and fine-wooled sheep, carrying close fleeces, would come to be entirely neglected. But if, instead of this prevention, he should be convinced that it might be very possible to find a sheep that would have a tendency to fatten kindly among those breeds that carry very fine wool and close fleeces; he would be as anxious to select from these breeds, as from others, and probably as successful too, if he had set out at the same time with the man who began to select from the coarse breed. I am, myself, perfectly satisfied, from a variety of facts that have fallen under my own observation, which would fill a volume nearly to enumerate, that fine wool, for example, is neither necessarily connected with thinness of pile, (the Spanish sheep carry the closest pile of fleece yet known in this country) with shortness of staple, (I once had a fleece of wool that

that measured 17 inches and half, which was finer than the best Spanish wool I could buy in London, and extremely soft) with tenderness of constitution, with a tendency to fatten slowly, or with any one quality that can be named, though it may be *accidentally* connected with these. And I have not a doubt, but when the eyes of mankind in general shall be opened, so as to admit of their examining the facts that fall under their notice without prejudice, they will be able, in time, to select breeds that shall be distinguished not only for *one* valuable peculiarity to the exclusion of all others, but even to obtain that valuable peculiarity conjoined with most, if not all the other peculiarities that can be desired; that period is, I fear, still at a great distance. .

But if these remarks shall tend in any degree to call the publick attention to this subject, whether with a desire to refute or to confirm these remarks, it will equally answer the end in view, which is to remove hurtful prejudices, and to discover the truth. He who does so is on my side, alike if he refutes by just reasoning, from well-established facts, as if he confirms these remarks.

*The SECRETARY of the Bath and West of England
Society to Dr. ANDERSON.*

THE Secretary of the Bath and West of England Society begs leave, in the most respectful manner, to convey to Dr. ANDERSON some few remarks, and queries, which arose in the Committee, respecting his excellent paper on wool-bearing animals. In general, as might be fairly expected, this paper was much approved; but doubts arising on two or three sentences, they will be set down in order, and the Doctor will greatly oblige by giving them a reconsideration and reply, as early as shall be convenient to him.

1st. "And is it not also a fact, that though it
"be now *proved to demonstration*, by repeated ex-
"periments, that the wool of sheep brought from
"Spain *does not degenerate in Britain*,* there has
"been 'till this hour *no attempt made to obtain a*
"single individual of the finest breed of sheep, from
"Spain?"

* Query from the Committee. *On what experi-
ment or experiments is this fact, if it be one,
founded?*

§ From the same. *Has not the attempt been made
by the King, and succeeded? Or, at any rate, are
not the Rams selected and sent to him by the
Marchioness Del Campo, to be considered as
the best?* 2dly. Nor

2dly. " Nor is there a single fact, that ever has
 " been discovered, which gives the smallest coun-
 " tenance to the generally received opinions, that
 " heat tends either to make the fleece thinner in
 " pile, or to encourage the growth of hairs among
 " it. Far less that it operates, as Mr. BUFFON
 " and his followers assert, in producing permanent
 " changes on the descendants of animals."†

† Query from the Committee. *Is this a clear
 case? Do not our sheep sent to and kept at the
 West-Indies, rather prove the contrary?*

To JAMES ANDERSON, Esq; L.L.D. F.R.S.

ANSWER to the SECRETARY.

DEAR SIR, Saturday, Feb. 25th, 1793.

I Thank you for your very kind letter of the
 13th instant, which only came to hand on
 Thursday last; I embrace the first post for acknow-
 ledging that favour, and of giving answers to the
 queries your Committee have done me the honour
 to propose.

1st. A variety of experiments have been made
 with the Spanish breed of sheep for three years
 past, by many of the members of the Society of
 British Wool. I have seen many specimens of the
 wool

wool of both parents, and of the progeny, which have been compared together, by the members of the Committee and others; and in no instance has it ever been observed, that the wool of the progeny, where the breed was pure, was *coarser* than the average of the parents. Of the effects of crossing, and other peculiarities affecting the wool in particular cases, I have not time to speak; I shall only observe, that, in general, the Spanish sheep that have come to Scotland have not been found to thrive, being liable to many diseases, especially the foot-rot. You are aware that bad health affects the *quality* of the wool, in a very remarkable degree, in some cases.

2dly. The King has certainly got sheep from Spain, as has the Society for British wool. But do the gentlemen of the committee believe that Mr. BAKEWELL, or any other eminent breeder, would have thought he could have obtained the very best kinds of British beasts, by getting the Duchefs of * * * * *, or any other Duchefs or Duke in the kingdom, to order her or his steward to buy the best, and send them to him? Such are not the steps required to make improvements of this kind. Do we not all know, that every person of high rank is liable to be imposed upon by their servants and dependants in almost every thing? And what would have been the consequence, if the steward had wished to frustrate the
liberal

liberal intentions of his mistress? No precautions have been adopted to guard against this. We know that the *finest woolled* Spanish sheep have not been sent, because finer Spanish wool can be bought than any of them carried. And I have very great reason to believe, from the information of persons who have seen the flocks in Spain, that there are fine woolled sheep in Spain much superior *in carcase* to any we have got.

3dly. If any of the gentlemen of the committee knows of any well-authenticated fact, which proves that the fleece degenerates as specified in the West-Indies, I shall be glad to be informed of it. I know of none, though I know it has been asserted ten thousand times, by persons who never had adverted to the fact; before I did advert to it, I myself believed it firmly; since I investigated the case with attention, I have been obliged to abandon that opinion. When the gentlemen of the committee advert to the numberless opinions that are readily admitted, without proof, as facts respecting wool and sheep in Britain, they will not be surprised at this opinion respecting sheep in the West-Indies being admitted. I have been in the custom, for many years past, of admitting no assertion, on subjects of this sort, without proofs; and in searching for proofs on this head, I have found a great number of facts that have obliged me to abandon my

former opinion. No opinion is more universal in the West-Indies, than that the sheep which are deemed the native breed of the island of Jamaica, carry *no* wool at all, but hair only. I had an opportunity, I think, of sending to you a specimen of the natural fleece of one of those sheep which consists for the greatest part of wool, perhaps *finer* (undoubtedly softer) than the best Spanish wool.

Please to accept of these hasty notices in good part, and believe me to be, with great sincerity,

Dear Sir,

your obliged humble servant,

JAMES ANDERSON.

Mr. Wm. Matthews.

DEAR SIR,

I Write these few lines merely as a supplement to my paper on wool-bearing animals. The small specimen inclosed is the half of a tuft of wool which Sir J. BANKS sent me, that was plucked from the back of one of the Jamaica breed of sheep just come into England. The owner of it, when Sir J. B. wished to see the wool of it, told him at once that it carried no wool, but *hair*. When he pulled the tuft and examined it, he was astonished to find so much very fine wool among a very particular kind of kimps, as you well see when you examine it.

Only

Only take notice how easily error may be propagated as truth. Had this sheep been allowed to remain untouched till the shearing season, it would have been found that it afforded *wool*, instead of the hair it was thought to have carried in Jamaica. Thus does inaccurate observations, in a thousand instances, pervert our reasoning, and make us embrace error instead of truth. Adieu! in haste,

• • • Your's sincerely,

JAMES ANDERSON.

Mr. Wm. Matthews.

N.B. This sample is preserved for inspection, by the Secretary. It contains about an equal quantity of hair, as coarse as that of almost any dog, and of wool as soft as silk.

[The following letter to the Secretary was introductory to the foregoing Essay, &c. and is inserted here, not as essential to the main production, but on account of its allusion to other subjects.]

ARTICLE II.

On Canal-Locks, Bridges, Peat Moss, &c.

[By Dr. ANDERSON.]

I Have been a long while past a very unprofitable member of the Bath Agriculture Society; but, I trust, the avocations I have otherwise had will
D 2 plead

plead my excuse. In order to make up, in some measure, for that delay, I send along with this a few remarks on a subject, which, although it has obtained some attention for a short while past, still stands in need of much farther elucidation. If it shall have the tendency to provoke an answer, I shall not be at all dissatisfied; for though I have no intention to engage in a warfare with any one, yet as those who are to answer must at least reflect a little upon the subject, it has a chance of engaging them and others to attend to facts, which might otherwise be suffered to pass without notice.

I make no doubt, but you will be possessed of all the Agricultural Surveys yet published; I have seen most of them, but not that of the county of Somerset. The survey of Aberdeenshire was written and printed in great haste, as you will observe by the typographical errors. I had some correspondence with Mr. STEPHENS, of Camerton-house, near your place, respecting the machine for raising boats in canals, slightly mentioned in the appendix to that publication. Since that time, I have also corresponded with the managers for the Rochdale canal in Lancashire, on the same subject; and I have the satisfaction to find that all the engineers, and men of understanding in that line to whom it has been shewn, approve of it in the fullest manner, and wish to have it adopted; but how to satisfy the numerous subscribers, who are no judges of things of that nature,

without

without having it actually put in practice at large, they know not. When I stated to the engineers at Manchester the objection as to the strength, that had been hinted at Edinburgh, and explained fully the manner of its construction, they made very light of it, and said, upon that principle they might lift a town if it should be required—a strong enough hyperbole! but very expressive of their opinion. These gentlemen conceive, that by adopting this contrivance in place of locks, the expence of a canal may, in many situations, be diminished more than one half, not only by saving in the masonry, &c. but also by the saving of water, which will render unnecessary large reservoirs, which add prodigiously to the expence in almost every situation, and in some render canals totally impracticable. None of them, however, have hitherto adverted to another circumstance sufficiently, which I consider as of even greater importance than these, which is, the unlimited freedom of intercourse it will admit of, and the benefits it will procure in regard to agricultural improvements especially, which is an object that has scarcely been hitherto adverted to in making canals; but it would require long elucidations to explain this. Nothing now is wanted, I think, to render canals practicable every where, but a cheap method of constructing aqueduct bridges, where they become absolutely necessary, about which I am just now engaged; and though I have not my drawings yet finished, I shall be very soon able to shew

shew that a bridge from 2 to 300 feet span may be constructed at less than half the expence that the price of driving the materials only for an ordinary bridge in most cases would cost. The power of lengthening the span, so as to avoid the necessity of central piers, is in some situations, especially where rapid torrents occur, or great heights are to be levelled, of prodigious importance.

In the beginning of last summer I published a small Treatise on Peat-Moss, a copy of which I have desired my bookseller in London to deliver to your order, together with a Treatise on Sheep by Dr. PALLAS, in which you will find some observations of a similar nature to those in the paper sent, with fuller illustrations on some heads; though it is placed in a very different point of view in some respects.

In the Treatise on Moss, to adopt a fashionable phrase, you will find that I have *sported* a new opinion respecting the theory of its formation, which I find proves very hard of digestion to the naturalists of the present day. After having shewn, by facts that cannot be controverted, that moss could not have been produced in the manner that has been commonly received as incontestibly certain till just now; I put it as a query, whether peat-moss is not a *living* plant, and not a congeries of decayed plants in a particular state of preservation, and give reasons for suspecting that it may be so. I have not found

as yet one person who could bring any thing like a valid objection against this, but I have found very few who are disposed to adopt it; most persons indeed shew an invincible reluctance to admit it, though they can find no reason why they should not; this is, to me, an object of no importance, and I am amused at the perplexity it occasions. I had lately a letter from Sir JOSEPH BANKS on the subject, who went farther than most others have done, and proposed one objection, which, when examined, chances to turn out to be one of the strongest arguments that could be produced in proof of it. Such speculative opinions may afford a little amusement, but I consider them as of no importance; it is the *practical* part of that treatise alone, which shews how moss can be converted into a productive soil at small expence, that I consider as of any value.*

You may perhaps have heard by some accident that I discontinued the publication of the Bee at the end of the last year. 1793, owing to tardy payments. The man * * * * *, at * * * * *, I find has been little better than a swindler, as he ordered about 50l. worth of them, which he has sold, and not paid me one farthing, and I learn it is in vain to look for it. I shall in future keep myself free from every mercan-

* This knowledge is undoubtedly of *much* value, and the treatise alluded to, coming from such a hand, will of course be deemed worthy of proportionate attention. EDITOR.

tile concern, as I am very ill calculated for managing business of that kind.†

Wishing you good health, and every other earthly comfort, I remain, with great esteem, dear Sir,

your very humble servant,

JAMES ANDERSON.

† It is much to be regretted that our ingenious and worthy author should be disappointed in such a publication, which had certainly great merit; and it is to be wished that the remaining copies may find the sale they so well deserve. EDITOR.

ARTICLE III.

On the Orcheston Meadow-Grass.

[By BENJ. PRYCE, esq.]

*To the President, Vice-Presidents, and Members of the
Bath and West of England Society.*

GENTLEMEN,

SOON after the Society was first established, the attention of its members was particularly directed to the very extraordinary produce of a meadow at Orcheston St. Mary, about nine miles from Salisbury.* This meadow has engaged the attention of

* See vol. i. art. xxi. p. 93.

several

several eminent authors, and botanists. CAMDEN, in his Britannia, speaks of its producing grass twenty-four feet long, which he calls, "*Gramen Caninum supinum longissimum nondum descriptum.*" STILLINGFLEET, in his Tracts, concludes that this grass is the Flote Fescue, (*festuca fluitans.*) Mr. CURTIS, author of the Flora Londinensis, is, I believe, the first who informed the publick that the fertility of the meadow is not owing to any new grass. The Rev. Mr. SWAYNE, in his Gramina Pascua, concurs with him in opinion; but, from information, pronounces that the meadow foxtail (*alopecurus pratensis*) is the famous long-grass.

Convinced that the true cause of the fertility had not been discovered, on the 3d of November 1790, I enquired at the neighbouring villages for an intelligent labourer, who had been used to work in the meadow, and was recommended to WILLIAM FORD, of Tilthead, who had from time to time worked there for 36 years. I desired him to procure a spade and mattock, and when on the spot asked him whether there was any part of the meadow more fertile than the rest? He assured me there was, and pointed it out. I then enquired whether there was any part less fertile than the average of the meadow? He answered that there was a spot, containing about twenty perches, not near so fertile as the rest, and which produced little, if any, more grass than the adjoining meadows. This part he shewed me, as he also did those

those parts of the meadow where the produce was of a middle quantity, between the two extremes. We then went to work, and on striking into the most fertile spot, found, at the depth of between three and four inches, a bed of loose flints, unmixed with soil, and into which, no roots penetrated.

A like bed of flints was found about a foot below the surface, where the product was of a middle quantity; and in the most barren part, we dug to a considerable depth, and could find no flints at all.

The soil was alike in each place, a light hazle loam, similar to that of the adjoining meadows. I was informed that the several spots I examined, had equal benefit of the water, in which there seems to be nothing peculiar, or different from other small streams, which run through villages between the Wiltshire hills.

—It was my intention to communicate this discovery to the Society, with such observations as occurred to me, together with a particular account of the herbage, long ago. The proper season for examining the herbage is whilst it is in bloom; this is of short duration. Some engagements at those seasons, and a long excursion on the Continent, have intervened and prevented.

I have remarked that the meadow is much addicted to the growth of comfrey, (*symphitum officinale*) and also to that of the creeping crowfoot, (*ranunculus repens*.) I saw a meadow-foxtail (*alopecurus pratensis*)

pratensis) left by the mowers, which had shot up between the thorns, by the hedge-side, to the height of near six feet; and have since found that the marsh-bent (*agrostis palustris*) occupies a considerable part of the ground, and that the *Poa-trivialis* (or rough-stalked meadow-grass) also flourishes much in this meadow. The habits and appearance of the *agrostis palustris*, or marsh-bent, and of the *stolonifera*, or couchy-bent, are in this situation so much alike, that it is difficult to distinguish the one from the other. They both bend at the joints, or knots; fall down, take fresh root there, and run along the ground. It is one or both these grasses, which I conceive have grown to those uncommon lengths, for which the meadow has been so much celebrated.

However this may be, I have no doubt that the great fertility arises from the understratum, and a plentiful supply of water.

In accounting for this fertility, it has been said, that grasses take better root in such bottoms. If my observations are correct, they do not root at all there; nor do I conceive that the fibrous roots of grass would derive support, or imbibe nourishment, from a bed of flints or stones. The *long-grass*, so much celebrated in this meadow, which is nourished by a succession of roots, scarcely penetrates an inch below the surface; and that, so slightly, that by taking hold of the panicle, or top of the culm, a long length of it may be severed from the ground.

The

The under-stratum seems rather to act by preventing the roots of some grasses from penetrating too deep, and by enabling them to collect near the surface, and retain whatever the elements afford for their support; and probably also, by absorbing the water which has done its office.

There are some remarkable truths to be attended to:—*1st*. The meadow is most productive when covered with water great part of the winter. This would greatly injure common water-meadows; the fertility of which depends, in great measure, on the water lying on them but a short time together, and then being laid dry. *2dly*. It is most productive where there is but little depth of soil, and the flints are nearest the surface. These circumstances, which differ from common cases, seem to point to some powerful agent in vegetation, collected by the water, the progress of which is stopped by the flints, and not suffered to penetrate deep into the ground.

It is well known, that rain water, especially that of thunder showers, or water exposed to the influence of the atmosphere, where the elementary fire or electrical matter abounds, is much more fertilizing than that which is drawn from a well. It is also known, that water attracts, and is a great conductor of electrical matter; and I conceive that flints, like glass, are non-conductors, or bodies which will in great measure stop its progress.

It will not then be difficult to understand that the electrical matter, conveyed in the water, instead of penetrating deep into the ground, is obstructed by the flints,* and collected about the roots of the grasses, where it enters, and becomes a most active and powerful agent in vegetation.

This opinion is however advanced with diffidence. The facts which gave rise to it are striking, and the discovery may be useful; it may assist the philosopher, in explaining or accounting for some of the principles of vegetation, and may encourage the husbandman to form water-meadows on similar principles, wherever circumstances will admit of it.

I am, Gentlemen,

your obedient servant,

BENJAMIN PRYCE.

Park-street, Bath.

* The learned and celebrated Dr. INGENHOUSZ, of Vienna, has informed the writer that he has made experiments on flints, which prove them to be non-conductors, or bodies which stop the progress of electrical matter. He thinks that the intelligence conveyed in this paper is very important; and concurs with the writer in accounting for the fertility of the meadow.

ARTICLE IV.

On the CURL in POTATOES.

[By BENJ. PRYCE, esq.]

GENTLEMEN,

AS Potatoes are so general and valuable an article of food, an enquiry into the cause of the disease called the Curl, which so much impedes their growth, and injures their quality, seems perfectly consonant with the views of the Society. For several years I have examined a great number of crops, made experiments, and collected every well-authenticated fact in my power; from all which I have been ready to think, with our able Vice-President Mr. BILLINGSLEY, (and many other attentive observers) that the subject seemed to be “involved in impenetrable mystery.” Like him, I have found that potatoes of the same sort, kept in the same manner, planted at the same time, in the same soil, and in every respect alike circumstanced, have produced part of the crop curled, and part not curled;—and like him I have found two shoots from the same set, of which the one was curled, and the other healthy.*

After much diligent observation and enquiry, I had reason to believe that the disorder did not arise

* See Mr. BILLINGSLEY's Observations on the Curl, vol. vi. of the Society's Papers, p. 344.

from degenerated or defective seed; and as it is certain that the plant is diseased when it first appears above the ground, I concluded that the germe or shoot must receive an accidental injury, between the old set and the surface of the ground. Strongly impressed with the truth of this opinion, I dug up several curled roots; and compared them with healthy ones. The first difference that occurred to me was in colour. The lower part of the healthy roots was whitish, without scar or blemish; and of a reddish purple colour, near the surface of the ground. The diseased roots, near the surface of the ground, were whitish, and the lower part had more or less the appearance of canker. On a further inspection, they were found to have been nibbled by some insect. This was not equally apparent in every shoot. Some were found, where the first shoot was eaten off entirely, about an inch, more or less, from the set; and from the part which remained a new shoot vegetated. Others were eaten about half through, and in length from an inch or two to a mere point: and in some plants the wound seemed quite healed, and the only appearance was that of a small scar, or spot, of the colour of an iron-mould. I have found more curled plants arising from the butt, than from the crown end of the potatoe, and from small potatoes than from large ones. The shoots which grow with least vigour, are longest exposed to accidental injuries, and probably are more mild or palatable to insects.

From

From many observations made on sets planted at different depths, I am convinced that deep planting is an erroneous practice. Those planted near the surface generally vegetated the most luxuriantly; the influence of the sun and atmosphere were sooner received, which, hardening the fibres of the young shoot, quickly rendered it less liable to the disease.

The theory of this disorder seems very consistent with what we observe in other vegetables. It is not upon the potatoe alone that such depredations are made. A worm is frequently found in the roots of cabbage plants, sufficient to check the luxuriance of their growth; but these being nourished by broader leaves and more strong and hardy fibres than the potatoe, receive less injury. To young onions, which are more tender, and depend chiefly on the root for sustenance, the worm is more fatal than to the potatoe: soon after the attack these die away. We may remark similar effects above ground, where we see the insects that commit the injury. Ants and earwigs, upon wall trees, a small black insect which is found on the top of beans, all prey upon the tender succulent parts; and the injury received in these, as in potatoes, *causes the leaves to curl*.

In northern aspects, or on cold damp land, the curl is less frequent than on warm or sandy land, where insects are more numerous; and it is pretty generally acknowledged that seed potatoes, procured from damp morassy lands, or those from more cold

or northerly climates, or situations, will not curl the first year after planting. This seems not difficult to account for. All animals have a choice in their food. Cattle will not eat grass which has imbibed stagnant juices, or that which farmers generally call four. The palate of insects, it may be inferred, is still more nice; these we see feed on the most delicious fruit, which is exposed to the sun, whilst that in the shade remains untouched.

The potatoe, it is said, was introduced into this Island near two hundred years before the curl made its appearance. • That this vegetable should, after such a period, suddenly degenerate, and that the soundest seed should now degenerate in two or three years, seems not very consistent with sound philosophy.*

* The writer of this paper finds equal difficulty in assenting to the theory of Mr. HOLLINS, altho' repeatedly honoured with the approbation and rewards of a great and respectable Society. Mr. HOLLINS tells us, that the curl is owing either to the potatoe sets being exposed too long before they are planted, from their vegetable power being dried up in an ebb soil, or from being too much forced by manure or cultivation; on which last reason the greatest stress seems to be laid. But all the cultivators of potatoes which I have conversed with, who remember when the curl first appeared, concur in testimony that their management in these respects before the curl was known, at the time when it was most injurious, and since it has abated, has been precisely the same. Indeed, we can scarcely suppose that the curl was produced by any pernicious alteration in the mode of culture, which suddenly took place throughout the kingdom:—Nor is it reasonable to conclude that the quantity of manure, generally allowed to potatoe crops, is sufficient to produce such uncommon effects. If manured crops are

Natural historians remark, that in the production of noble animals, nature acts with a kind of dignified œconomy, but that meaner births are lavished in profusion; and that, of all productions in nature, insects are the most numerous. It may be remembered that about fifteen years ago, when the curl was most fatal, there was a general alarm for the consequences that might arise from insects. Almost every bush teemed with their nests. Printed papers were sent from London, and dispersed in the country, recom-

now most liable to this disease, it is, probably, because insects frequent dung-hills, and are from thence carried into the ground. Mr. HOLLINS informs us, that potatoes planted on land which has been pared and burnt will not curl. Yet, paring and burning is allowed to be a *very great* ~~forcer~~ *promoter* of vegetation. May not the action of the fire, or the effluvia arising from burnt vegetables, prevent insects from harbouring in land so prepared?

Some gentlemen of great abilities, but who, probably, have not had opportunities of judging from their own observations, or from facts, seem to have become converts to Mr. HOLLINS's argument, by analogy, of florists having, by *forcing* produced double flowers, which are barren. It may well be doubted, whether the tuberos root of the potatoe would suffer, were this actually the case. Like other roots it is formed, and arrives at a considerable degree of perfection, before the seed is generated; which, in this vegetable, we find, is not necessary to propagate the species.

I have never seen a single instance of a double flower in a potatoe; where, so far from the stamens being forced into petals, we find the five anthers invariable closed together; which is a distinguishing mark of the Genus Solanum, of Linnæus, to which the potatoe belongs. Curled plants have all the appearance of weakness and poverty, instead of luxuriancy; some of them so much so, as scarcely to put forth any corol, or flower at all.

mending

mending for the sprigs which supported their nests to be cut off and burnt. About the same time a black worm did a great deal of damage amongst the turnips. Soon after which a brown, or amber-coloured worm attacked the roots of saintfoin; and in Wiltshire and Hampshire totally destroyed the crop in many fields.

If, from any cause, insects were become too numerous to subsist on the food which their species had been accustomed to, hunger may force them to take to other vegetables. The depredations committed by squirrels, in fir-plantations, which has engaged the attention of the Society, had its commencement not many years ago.

The accidental appearance of the curl may be accounted for in another way. The same insect, which, in a grub or caterpillar state, destroys the roots of vegetables under ground, afterwards takes wing, and flies away. It is well known that insects migrate, occasionally, but not regularly. The insect which first attacked the potatoe, may possibly have come from a distant country. "The Lord, by an east wind, brought locusts into the land of Egypt;—and, by a mighty strong west wind, took them away."

Whether the injury done to the potatoe be occasioned by any effluvia, or matter ejected by the insect, which gets into the circulation, and taints the juices, or whether it arise (as I rather think) from

the insect depriving the plant of part of its mucilage, deranging its organization, and thereby preventing the juices from being properly secreted, will perhaps remain doubtful, and is of little consequence.

When the vital principle is once become weakened, or vitiated, the disorder may in some potatoes be continued longer, and in others be cured in a shorter time, according to the degree of the disease, the strength of the stamina, the soil into which they may be transplanted, or the favourable or unfavourable season for vegetation, which may immediately follow. Thus, diseased seed has sometimes been known to produce a healthy crop, and sometimes a curled crop, and that, perhaps, without receiving any fresh injury from the bite of insects. From this cause, however, I have little doubt that the seed was first vitiated; and I trust that the knowledge of this circumstance may be one step towards the prevention or cure.

It is now about seventeen years since I laid before the Society my opinion on the cause of the rot in sheep, which is published in the first volume of the Society's papers. That subject was then involved in mystery, and my opinion was doubted and controverted. The society is since so well convinced of the truth of it, as to have offered a premium for a more perfect knowledge of the genus and species of the insect which occasions the disease, with the plant which it inhabits, and the best method of extirpating that insect, or preventing its destructive effects in the animal

animal oeconomy;—and no longer since than the last anniversary, voted a bounty to Mr. JEANES, for having found out a *remedy* for the disorder.

If these hints on the cause of the curl in potatoes should lead to a discovery of the means of prevention or cure, the writer will think that his time has been well employed.

I am, Gentlemen,

your obedient humble servant,

BENJAMIN PRYCE.

Park-street, Bath.

ARTICLE V.

*Description of a cheap and efficacious VENTILATOR
for preserving Corn on Ship-board.*

By THOMAS SOUTH, Esq;

[Illustrated with an Engraved Plan.]

SIR,

AT this time, when Government, through the apprehension of scarcity, offers large bounties for the importation of Corn, it becomes necessary to seek the means of preserving the cargoes sweet, both for the merchant's and the nation's profit.

The

The importation of grain is a precarious traffick, The produce of distant countries, or even of those near home, when long in collecting, or long detained on ship-board, is subject to heat, soon becomes fetid, and is often so far spoiled and depreciated in its value, as to sell for less than the original cost. Hence! the merchant overwhelmed with losses, regrets his patriotism, grows shy of importation, and, unless invited by a certainty of gain, drops the trade, even whilst the nation stands in need of supplies.

Ministry, aware of this, have judiciously provided for his security by an ample bounty; if we could further add an assurance of the good condition of the corn on its arrival, the abundant profit would enlarge the field of enquiry; grain would flow in from every fertile province of the globe; and Britons, instead of dreading the approach of famine, would become the store-keepers of plenty.

The present season demands the immediate exertion of every nerve to prevent the distress which threatens us. Each ship-load of corn, brought home in a state of perfection, makes a happy addition to the national stock; and will help to keep down the exorbitant price exacted by jobbers and overgrown farmers, under whose influence the markets rise.

Should the importation become extensive, and the means of preserving the grain wholesome be rendered easy, certain, and grow into use, plenty would

be the consequence, and the markets sink, to the disappointment of all those who are supposed unwarrantably to withhold their store to raise its price.

It behoves every individual to oppose iniquity like this, and to contribute what in him lies, to remedy the present evil. Impressed with this idea, I present my mite at the shrine of the publick, wishing it may prove an acceptable gift, and be put to immediate trial.

It is a simple, cheap, and, I trust, efficacious method of ventilating grain whilst confined on ship-board; sufficient, I presume, to keep it sweet and marketable, after sustaining a tedious voyage.

May I solicit the Bath Society, to whom I have the honour to belong, and to whom I stand indebted for past favours, to take the plan under their consideration; it's simplicity, to men of their sense and knowledge, will recommend rather than discredit it. It's powers indeed may be doubted; but when informed from me, that air-pumps of a like nature, in a more complicated machine, have performed their office to expectation, I trust the Society will credit my assertion.

If, on attention to its parts, delineated and described in the inclosed sheets, it should be their opinion that an engine thus constructed is applicable to the purpose designed, their patriotick feelings will be gratified, when I request them to communicate the plan to the Guild of Merchants at Bristol, among whom

whom (as the expence can be no object to men of their fortune) many members may be found, ready to try it in their first freight of corn.

Should it fortunately obtain the approbation of the society, its author will be exceedingly gratified; if found imperfect, they are welcome to lay it open for ingenuity to improve on. I have sufficient mechanical knowledge myself to increase its power *many, many tons* in a minute; but the complication of machinery can be no recommendation in engines constructed for naval purposes.

Desiring you, together with this paper, to present my best respects to the meeting;

I remain, Sir,

your humble servant,

To Mr. Matthews.

THOMAS SOUTH.

The Plan of the Ventilator described, with References to the Plate.

Fig. 1. **I**S a cylindrical air-vessel or forcing pump of lead, tin, or other cheap metal, its internal diameter being ten inches, and its length three feet, having a crutch-handled piston to work with, and an iron nose, viz. a hollow-inverted cone, two feet long, to condense the air, and increase its power in its passage downwards.

This

This cylinder should be riveted or screwed by means of an iron collar or straps to the deck it passes thro', both above, and below as at *a a*; and be farther secured by some hold-fast near *b*, to keep it steady in working.

Fig. 2. Is a bottom of wood $4\frac{1}{2}$ inches thick, with a projecting rim at its base for the metal cylinder to rest on, when cemented and screwed to the wood.

The centre of this bottom is excavated for the reception of the crown of the nosle.

In the same figure, the nosle is represented with its crown like a bowl-dish, to condense the air gradually, without resistance, in its advance to the more contracted base of the inverted cone, *i. e.* the top or entrance of the nosle. About two-thirds down this nosle may be fixed a male screw, as *c. c.* for the purpose hereafter mentioned.

N.B. The forcing pump should be cased in wood, to protect it from outward bruises, which would prevent the working of the piston, and ruin its effects.

The leather round the embolus should be greased when used.

Fig. 3. Is a crutch-handle fastened to the embolus *A.* by its iron legs *B. B.*

A. is a cylinder of wood, cased with leather so as to fit well, but glide smoothly in the metal cylinder; having an opening as large as its strength will permit, for the free access of atmospherick air.

C. is .

C. is a valve well leathered on its top, and yielding downwards to the pressure of the air when the piston is raised up.

D. is a cross bar of iron to confine the valve, so that it may close instantly on the return of the piston downwards.

Fig. 4. Is a tin pipe or tube of less than four inches diameter, and of such length as when fixed to the base of cylinder fig. 1, shall admit the nose d. fig. 2, to within half an inch of the valve E. at the bottom of the wooden cylinder F. in fig. 4, which valve E. will then yield to the pressure of air condensed in its passage through the nose, and deliver it into the pipes below,

This valve ~~must~~ be well leathered on its upper surface, and fastened with an hinge of leather to the cylinder it is meant to close; affixed to its bottom is the spindle G. passing through a spiral spring H. which being compressed on the descent of the valve will, by its elasticity, cause it to rise again, close the aperture above, and retain the air delivered beneath it.

On connecting this cylinder with the upper end of the nose at e. e. we must carefully prevent any lapse of air that way, by a bandage of oakum smeared with wax, on which to screw the cylinder like the joints of a flute, air-tight.

I. is a bar of iron, having a rising in its centre, wide enough for the spindle to play through, but at the

the same time sufficiently contracted to prevent the passage of the spiral spring.

Fig. 5. Is an assemblage of tin pipes of any lengths, shaped suitably and conveniently to their situation in the ship; to the form of which, when shut into one another, they must be adapted; observing only that the neck be straight for a length sufficient to admit the lower end of the cylinder *fig. 4*, as high as the letter *F*. or higher.

Fig. 6. To the middle pipe which runs along the bottom should be fixed a perpendicular one, fully perforated, to convey the air more readily into the centre of the heap, and this may have a conical top, as represented in the plate, perforated with a smaller punch to prevent the air from escaping too hastily. In large cargoes, two or three of these perpendiculars may be necessary, and each should be well secured by an iron bar *g*. screwed down to prevent their being injured by the shifting of the cargo in stormy weather or a rolling sea. The top of the conical cap of these pipes may reach two-thirds up the cargo.

Fig. 7. Is a valve of the same construction as that represented in *fig. 4*, but inclosed in a tube of brass, having a female screw at *f f*, adapted to the male screw *c c*. on the nozzle *fig. 2*, and may then be inserted into the head of the pipe *fig. 5*. This will add to the expence, but in a large apparatus is to be preferred as a more certain security from lapse
of

of air than the junction of the tube fig. 4, to the neck *ee*, in fig. 2.

N. B. *ee* is a neck of wood making a part of the bottom fig. 2, whereon to secure the tube fig. 4, when applied to the nosse.

The joints of the pipes, when put together for use, should be made air-tight by means of bees-wax or some stronger cement, till they reach the bottom of the vessel, when there is no farther need of this precaution.

The horizontal pipes should run by the side of the kelson the whole length of the hold, the tin plates of which K. is made, should be punched in holes like the rose of a watering-pot, in two or three lines only at most, and then formed into a tube with the rough side outwards. L. may have four or five lines of the like perforations. M. and the rest should gradually increase in their number as they advance towards the middle of the hold, and continue fully perforated to the last pipe, which should be closed at its end to prevent the ingress of the corn.

It is the centre of the cargo which most requires ventilating, yet air should pervade the whole. Like the trade-winds, it will direct its course to the part most heated, and having effected its salutary purpose there, will disperse itself to refresh the mass.

Where the hatches are close corked to prevent the influx of water, vent-holes may be bored in convenient

venient parts of the deck, to be bunged up or opened occasionally, from whence the state of the corn may be known, from the effluvia which ascend when the ventilator is working.

The power of the ventilator is determined by the square of its diameter, multiplied into the length of the stroke, and that again by the number of strokes in any given time.

To find the area of a circle and the solidity of a cylinder raised on that circle, ARCHIMEDES gives the following proportion :

As 1 is to .785398 decimal parts, so is the square of the diameter to the area of the circle. —

And as 1 is to .785398, so is the square of the diameter multiplied by the height to the solidity of the cylinder.

The cubical contents both of cylinders and tubes are found in the same manner, their difference consisting not in shape but solidity, the latter being hollow.

Then to find the contents of a cylindrical vessel, whose internal diameter is ten inches, multiply that into itself, and the square thus obtained by .7854, will give the contents of the circle in cubit inches, which multiplied again by 24 inches or lengths of the stroke, being the proportion of the barrel filled with air, gives in cubical inches the amount of each discharge on the descent of the piston. As thus:

Internal

Internal diameter of the pump or tube $\begin{array}{r} \text{Inches.} \\ 10 \\ \times 10 \\ \hline \end{array}$

$= 100$ or square of the Diameter;

Which multiplied by .7854 to bring the contents of the square to the contents of the circle.

Which multiplied by the length of the stroke $\left. \begin{array}{l} 78.5400 \\ 24 \text{ inches, produces } 1884 \text{ cubic inches.} \end{array} \right\}$ Contents of the area of the circle.

$\begin{array}{r} 3141600 \\ 1570800 \\ \hline \end{array}$

Which divided by 231 $\left. \begin{array}{l} 1884.9600 \\ 369 \end{array} \right\}$ 8.1600 gallons, which is $\frac{16}{100}$ ths more than 8 gallons at a stroke,

viz. the number of cubic inches in a wine gallon, quotes 8 galls.

$\begin{array}{r} 1386 \\ \hline \end{array}$

allow these decimals for waste of air in each stroke, and 60 strokes to be made in a minute.

Then - - - - - 8 gallons discharged at a stroke

Multiplied by 60 the number of strokes

Amounts to 480 gallons per minute;

Which multiplied by 60 the minutes in an hour, produces 28800 gallons [in that time.]

And that divided by 252 $\left. \begin{array}{l} 28800 \\ 114.3 \end{array} \right\}$ 252 tons.

(the number of

gallons in a

ton, both wine

and ship mea-

sure) quotes 114

tons in an hour.

$\begin{array}{r} .360 \\ \hline \end{array}$

$\begin{array}{r} 1080 \\ \hline \end{array}$

$\begin{array}{r} .700 \\ \hline \end{array}$

Then suppose the area of the hold of a ship to be=120 tons, and when freighted the interstices between the grains, together with the area between the surface of the corn and the underfide of the deck=5 tons—to the quantity of mephitick air confined; such being the lightest fluid, the major part of it would, soon after the commencement of the operation, be forced by the atmospherick air to vent itself at the holes provided for that purpose; and the remainder

remainder of the hour being employed in the like ventilation, five tons of fresh air would pass above twenty times repeatedly amidst the grains to cool, refresh, and sweeten the cargo. A purification thus administered once in eight-and-forty hours, would, I conceive, be amply sufficient to preserve the corn from taint or injury be the voyage ever so tedious, and unless it should by neglect have over-heated and grown together or settled too close, the labour would be that of a boy only, for the dairy-girl at her churn works harder than he otherwise need to do at this.

My air-vessel is, for the sake of cheapness, confined to the narrow diameter of 10 inches, but as the contents of circles are proportionate to the square of their diameters, by enlarging that you increase their power accordingly. Wherefore, by extending their diameter to 14 inches, the contents will be nearly doubled, and by adding 10 inches more to the length of the stroke, you almost treble the discharge of No. 1, and obtain a power capable of ventilating a cargo of 400 tons within the hour. But the air-vessel must be lengthened, the pipes at the same time enlarged, the metal of which the whole is constructed be in substance proportionable, and the labour that of a man, or perhaps two upon occasion.

A ventilator on the plan and dimensions here proposed, would come within the compass; I should think,

think, of five or six guineas; one on the larger scale, caused by the increased substance of the metal and the extra size and length of the pipes, might amount to twenty, which in either is under four-pence per quarter on the first cargo; and as they will last many years if well painted, and when not in use taken to pieces and put carefully by, I flatter myself it is an experiment well worth trial; particularly, if a premium be offered to the ship-owner, who by means of such machine imports his corn pure and untainted from a distant land.

OBJECTIONS made to the supposed Effect of the Ventilator, over ruled it is hoped, by the considerations which follow them.

1st. **T**HE holes pierced in the tin tubes which are to lie under the corn, seem capable of issuing (especially if an effort be made upon them) a much larger quantity of air, than the forcing-pump will supply in a given time. Consequently a given quantity of these holes, under a given pressure, will be capable of issuing the whole supply of air without any assistance from the remainder.

2^{dly}. If these positions are just, it must happen, that if a cargo of corn be unequally circumstanced

in relation to its permeability, the whole of the air discharged by the pump will issue through the *more* permeable parts of it, without affecting, in any degree, the *less* permeable ones.

3dly. In cargoes heated in any degree, and in those infected by that worm which fastens grains together by a web, the parts most affected become much more close and densely packed together than the rest, either by the swelling of the heated grains, or the web and dung of the worms which occupy the intervals between the grains.

If so, the parts of a cargo which require the most ventilation will receive the least; but in all cases it seems likely that the air discharged will not regularly permeate the whole of the cargo, but will pass through the parts where the grain lies lightest, and leave untouched those parts where it is most closely packed together.

ANSWER

To the preceding Objections.

THAT though the holes appear numerous, they must be small, lest the corn gain admission; and many (especially of the uppermost) will be nearly, if not totally stopped, by the pressure of the grains upon them. That the pipes which convey the air towards

the centre are not meant to be so fully perforated as those at and beyond it; and may all be still less so, if in practice found necessary. But as the quantity of air delivered by the forcing-pump, within five seconds of time, is equal to the contents of sixty* feet of four-inch pipe; within the first minute, the air (notwithstanding the manifold perforations, obstructed as it is in meandering through a mass so

nearly

* Thus calculated:

	Inches.
60 feet	4
X 12 inches	X 4
Produces 720 inches	16
as a multiplier.	the square of the diameter of the pipe.
X 57854	
= 12,5664	or area of the circle.
X 720	length of the pipe in inches.

Which divided by 231)9047,8080(39,1679 gallons and decimal parts, the whole
[capacity of 60 feet of pipe.

$$\begin{array}{r}
 2117 \\
 \hline
 \dots 388 \\
 \hline
 1570 \\
 \hline
 1848 \\
 \hline
 221, \text{ \&c.}
 \end{array}$$

Then a single discharge of the forcing pump being 8 gallons, five such discharges amount to 40 gallons, which is more than equal to the contents of 60 feet of four-inch pipe.

And as on the larger scale of ventilators the pipes need not exceed the same diameter, the power of air injected when its egress is stopped will increase sufficiently to force its way through webs, matts, and other obstructions, though impervious to the atmospherick fluid, unassisted by such mechanick aid.

nearly compacted as the bottom of the cargo must necessarily be, by the pressure of the heap above) will undoubtedly reach to the end of the pipes, and consequently affect the cargo even there.

Be it farther observed, that the flux of air compressed into an half-inch stream in its passage through the nose, to enable it to overcome the resistance of the spiral spring H, no sooner passes the valve E than it expands itself to the compass of the pipe; by which expansion, and extension (at the same time) forwards, its power becomes so weakened that small egress only will be made till the pipes are filled with a fluid more dense than atmospherick air, which will then, as is justly noticed, issue where it finds the least obstruction, unless attracted to the spot most heated.

Many circumstances may cause one part of the cargo to be less permeable than the rest; should it prove so, the means readily offer for airing and purifying even this.

Suppose the hatches to be caulked down, and the hold made impervious to water; in such case the lapse of air under the obstructions met with in its passage, could by no means keep pace with the influx from the forcing pump; consequently, if the holes in the deck designed for its exit, be kept close stopt till the pumper feels resistance; all the intervals of the cargo, be they ever so minute or irregular, must be occupied by fresh air, which, when permitted to escape, will carry off impurities with it. And thus,

by stopping and opening such vents repeatedly, no part of the cargo could miss of purification, and this perhaps may be the best mode of administering it.

Prevention is better than a cure!

In a vessel equipped with the apparatus described, the inattention must be great, if the corn be suffered to sustain any injury at all. By an early use of it, perspiration and damps will presently be dried away; heating of course will be prevented; and even the production of the pernicious grub alluded to: for be the nidus of its eggs ever so protective, their embryos will not vivify without moisture to sustain them. Wherefore, it should seem that the corn-merchant in future will have little to fear, save the influx of sea-water, and even this (if in small quantities) will, by the frequent use of the ventilator, gradually dry away.



ARTICLE VI.

On the different Kinds and Properties of Wool.

By Mr. J. COLLINS.

[The following remarks, coming from a correspondent of undoubted probity and good intentions, are inserted in his own stile and arrangement;—and as the knowledge of every writer, in his own particular department, is of much greater value in a work of this kind than the polish of periods, it is hoped that the information to be gathered from these remarks will conduce to the main end of the publication.]

SURRY.

RANSTED-Downs; short, thick, close; only saw it on the sheep's back.

Common-Heath; longer, yet soft, coarser, much filth or hoare.

Sand-Heath; fine, silky, full of white and black sand.

SUSSEX.

Down: South-Down; short, thick, a little inclined to harshness.

Underhill; the old sheep kept one winter off the downs, and shorn in the summer, softer but not so fine.

Weald; falling wool, mostly from the Underhill wool, deep combing, &c.

HANTS.

HANTS.

Forest; small, fine, filthy, sandy.

Down; larger, harsher.

Broken up; larger and harsher still, does not recover in a man's age.

DORSET.

Down; coarse and deep.

Forest or Common; fine, filthy, sandy.

WILTS.

Down; fine, soft, clean, white, before the breaking up so much down and the introduction of the large breed; now, clean, white, coarse, not soft.

Inclosure; mostly fatting, or to be put on fatting.

SOMERSET.

Inclosed; a deepish thin wool, yellowish, soft, and silky.

North part; thicker, shorter, not so fine, but good.

GLOUCESTERSHIRE.

South Part; large, deep combing, strong, whitish, rather coarse.

North part; more on the fatting.

MONMOUTHSHIRE.

Forest or Common; small, yellowish, fine healthy, and mossy.

Inclosed; small, but larger, yellowish, fine, clean, thick matted, or trinded.

HERE.

HEREFORDSHIRE.

Rye-Land; thin, hungry, harsh, out of proof, worse and worse, in the *working* (or *sand*) ground apt to be filled with the beards of the rye.

Inclosure; thick, yellowish, the finest wool in general in the kingdom, but much worse by mixture.

Forest or *Common*; small, soft, silky, and filthy.

SHROPSHIRE.

Forest or *Common*; small, yellowish, soft, silky, filthy, most times thick-haired, (or cat's hair) yellowish.

RADNORSHIRE.

Forest or *Common*; small, whitish, thicker, harder, filthy, and some sandy.

BERKSHIRE.

Deep, strong combing wool (they wind it outside outward.)

In Surry, Suffex, Hants and Berks, many shopkeepers gather small parcels, and sell in larger quantities to the clothiers and woolstaplers, (mostly to London.)

On the Downs and inclosed Farms; sell near the Winchester fairs for the benefit of carriage.

Monmouthshire, Herefordshire, Shropshire, Radnorshire; collectors of small parcels, who bring them to the different fairs in those counties, (mostly loose wool) though the finer sorts are hindered by act of parliament.

In

In the Isle of Wight, the Down wool is rather finer than the Wilts; but they have a very bad custom of making very long, small, hard bands, going round the fleece three or four times; the wool in those bands (if old) can never be properly sorted.

Inclosures and large farms have gradually introduced a larger sort of sheep, and consequently coarser and deeper in the staple, and in the same or greater proportion lessened the quantity of short or clothing wool, whether to the emolument of the community at large or not, is a question; my decision is on the negative side.

The *whim of the day*, the introduction of Mr. BAKEWELL's breed, has answered many people's ends, whose interest it was that this whim should take place and be continued; but of a woeful experiment to many who pursued this whim; the introduction of the goggles, a disease not known to our unwise forefathers, but spread far and wide by their wiser children; besides thwarting the universal Disposer of all creatures, who hath placed the smaller cattle, vegetables, &c. on the hills, and the larger in plains and low lands; and the folly of putting such large rams to such small ewes is double folly, some having lost the greater part of their flock thereby.

The goggles have nearly overthrown the whim of large sheep, introduced at first by some noblemen, or men who had large estates in their hands, and vied with each other who should produce the largest, and

fattest cattle; which has been an astonishing injury to the community, viz. a small or middling family could dispense with a leg of mutton 5lbs. or 6lbs. but cannot on any account buy one of 14 or 15lbs. besides the strong, nauseous, cadaverous taste of the latter, compared with the fine flavour of the former.

Now, another whim is set on foot of crossing the breed of sheep far and wide. To what purpose? Answer, none at all. Reason: the exercise of a little of that scarce commodity, *common sense*, would effect the business without all this parade, bustle, expence; none knowing why or wherefore, only that they would not be the last in the fashion. Speaking with a South-Down Farmer at the Wool-feast, 1794, my advice to him was “to encourage the whim, and “make the most of it, for you may depend on it “that it will not last; for common sense had no “hand in it; besides, you cannot but laugh in your “fleeves at them, as you yourselves have tried the “experiment on almost every farm on the South-Down, when the son has thought himself wiser “than his father, and most of you have repented “and gone back again to the plain common sense “of your ancestors.”

The pamphlets which have been published on this subject, and have fallen into my hands, are not worth noticing: The history of the woollen trade is treated of in a compendious view, and well worth perusal, by Mr. DYER, in his poem called *the Fleece*; but this is not the business in hand.

Terms

Terms of art, if not well defined, will leave the reader, student, or historian, in the dark, or at least liable to err.

WOOL. A uniform hair, protruded through the skin of an animal from a root, and which does not fall off without some violence or disease in the animal: the hair of the head of a human creature: the mane and tail of horses and black cattle, and it seems to me of some species of dogs: most commonly applied to sheep of various countries.

FUR, is an hair of a capillary nature, and usually such creatures have two coats, a summer and a winter; and therefore they are fullest of fur in the winter, and as the spring advances it drops off by little and little, not to leave the animal quite bare; as in horses, cows, pigs, dogs, and it seems to me most creatures which are termed wild.

Sometimes these are mixed, which is an inconceivable damage to the medley cloths, and seems to call for a remedy if possible.

FLEECE. The wool shorn off one sheep, and wound up together by a band twisted out of some parts of it.

TOP. In the fairs at Hereford, &c. the same thing, though sometimes through avarice the fleece is broke into several parts, and every one wound up is called a top, and the seller can suit himself as to the sum of the scale: in trinded wool, which is wound up as close as possible in the form of skittle-pins, each is called a top, and what is bound up in
rind

rind of the tree, is called a stone or $12\frac{1}{2}$ lbs. by which it is weighed, that being the draft.

Various drafts for wool. One pack in the country 244lbs. when fit for use in London, 242lbs. In Romney-Marsh and Essex, some part of Surry, Suffex, and Hants, the wool cloth is filled, and then weighed, deducting 4lbs. in every 12 score, as customary allowance to the buyer. In Suffex, the todd $32\frac{1}{2}$ lbs. in Hants 31lbs. upright, or $30\frac{1}{2}$ lbs turning. Reading fair, 29lbs. The standard weight for clean wool fit for use, $30\frac{1}{2}$ lbs.: the standard todd, 28lbs.: the weight in Wilts, $21\frac{1}{2}$ lbs. The stone at Hereford, &c. $12\frac{1}{2}$ lbs. much altercation between the buyer and seller about the half pound; the woolstapler allows it on wool fit for sale, and therefore it seems but reasonable to have the same advantage when he buys, though that is far short of an equivalent in the common Forest wool.

STAPLE. If a sheep with a good coat on him walks, the wool *parts* in many places; if one of the partitions were to be plucked or cut off, that would be a staple, and there are a variety of terms of art used on this occasion; as long, short, thick, thin, hovery or frothy, hard, harshy, soft, smooth, clear, strong, rotten, weak, colted, felted, matted, hitched, in the middle, or in the ground; in proof, or out of proof.

N. B. If combing wool is matted in the middle of the staple, it will not open in the suds, and in combing

ing will run almost to pinnels; if at the ground, it will open, and is but of little harm.

SORTS. Combing we made only matching, and body (information says fifteen or sixteen different sorts) where the combing is tried, sorted, or used, regarding the fineness of the hair, and the length of the staple; there is a refuse after combing left in the combs called pinnels, used for *linseys*. Short wool: we made eight sorts of it, and those used for various purposes.

SELLING PRICES ABOUT 1780.

Matching 11½d. to 12d. Body 8½d. to 9d.

HEREFORD.	SHROPSHIRE.	SOUTH-DOWN.	WILTS.
Choice locks 2s 6d.	— 2s. 0d.	— 1s. 9d.	— 1s. 6d.
Overlookings 1s 4d.	— 1s. 3d.	— 1s. 1½d.	— 1s. 0d.
Middle fine 1s. 0d.	— 1s. 0d.	— 0s. 11d.	— 0s. 10½d.
Running fine 10½d.	— 0s. 10½d.	— 0s. 10d.	— 0s. 9½d.
Second, no distinction, 9d. Abb 8d. Warp 6½d. Lift 5d.			

BUYING PRICES.

Herefordshire, stone from 18d. to 2s. Shropshire, Radnorshire, 12d. to 14d. South-Down, 25s per tod, to 32s. Wilts, 9½d. to 10d. per lb. Hants, 22s. per tod.

Disorders in sheep. The rot or consumption, the pest-rot, or falling of the hair, on some the foot-rot, called the gout; the hunger-rot or starving; the goggles; the red-water, or dropsy; the stone; the fly or maggot; giddiness; dog or pigs mouth; broken mouthed; the worm in the tail; the shab, itch, or scab; lice, dog-worried, bit, or torn; the small and large tick; the staggers; the chill.

if

If a cow is out of order, a farmer will go or send many miles to a cow-leech for remedies; this cow is worth perhaps 9l. or 10l.; but if a sheep is disordered, the shepherd cuts off his ears and his tail, so that the blood may come; gives the ears and the tail a knock or two with the handle of his knife, and so turns him going; if the sheep lives, he lives; if he dies, the skin is stripped off, and the shepherd's dog eats the carcase: this is the common course of things. Is this agreeable to common sense? The flock, of suppose 500, worth 15s. each, comes to 375l. if wethers or barreners; but if couples, suppose at one guinea each couple, that is 525l.; then the care of a flock of sheep to a cow should be in the same proportion as 375l. to 9l. or as 525l. to 10l. That cannot be any good excuse to say that the value of a single sheep to a single cow is only to be considered in this case. Answer; No man within my knowledge keeps 500 cows; but many persons keep 500, 1000, yea, some I have known between 2 and 3000 sheep; and therefore the judgment should be the worth or value of a cow or cows, compared with the worth or value of a flock of sheep, as part of the farmer's stock, and so his care should be in proportion to the value.

The wool of the sheep does in a great measure discover the diseased state of the animal.

In Smithfield market, the sort, make, and wool, of different sheep might be observed and compared with advantage.

The

The wool of those Spanish sheep which I have examined, is degenerated below the quality of the true South-Down wool.

It is my opinion that most of the Suffex sheep, introduced into Hants and Wilts, are already considerably degenerated, as to the wool, in shortness, fineness and quantity.

The whim of black-faced or white-faced, black legs or white legs, has been continued in some places time immemorial, and the same as to horned or not-sheep; also as to bare or woolly faces. But none that I have met with, have given any satisfactory reason, either for or against the one or the other.

There is a very remarkable quality in *black* wool, which is, that moth gets into it much sooner than into *white*; and even if made into cloth, the moth cannot be easily kept out of it; but if the wool be dyed, that quality is destroyed.

If what is written meets with approbation, it may be enlarged by some observations on the disorders and the probable means of preventing them, if not curing those which are diseased. Mention has been often made of "improvement in the breed of sheep:" to me it appears a very vague phrase, without any determinate meaning. If the farmer, or grazier, or butcher, gets more money by dealing in any particular description of sheep, they judge it an improvement, whether the quantity of wool, size of the sheep, it's fatness, or it's tallow and pelt, be the most remarkable.

The

The woolstaplers and clothiers esteem it an improvement if the wool be thicker, shorter, finer, less breach, fewer stitch hairs, no black wool, and a small belly lock.

The stuff manufacturer praises the wool that is long, clear, strong, fine staple, and in good proof, because then he will have more worsted in a dozen, and fewer pinnels.

The noblemen and gentlemen farmers form ideas in their own minds, and when their schemes accord with those ideas they are called "improvements," whether in reality or not, as many instances might be given in proof. Yoke in wool seems to be the inspissated perspiration of the animal, but not sweat, for that is watery and saltish, which would corrode the skin of the animal, as we experience in the water running from the eyes or nose, excoriating wherever it runs; but the yoke seems to be of an oily nature, easily miscible with water, and will scour almost as well as soap. The quantity, at a medium, of Hereford, Shropshire, Suffex, Wilts, is about half the weight of a yolky fleece; weighs 3lbs.; the yoke in that fleece will be near $1\frac{1}{2}$ lb. which is the customary allowance to the wool-buyer; if any sheep has escaped washing, and is shorn in the yoke, the farmer sometimes orders such fleece to be hard-washed, which does much harm, as it mixes the fine and the coarse together, so that they are with great difficulty afterwards separated from each other; and some

some out of covetousness, near sheering time, sheer the dead skin, and wash that wool, which is worse still if it be used together, as it is a cause of extraordinary shrinking: but if in either of these cases they would use it for blankets, mops, &c. for their own use, well and good.

When wool is to be scoured for the clothiers use, it loses of its weight from $2\frac{1}{2}$ lb. up to 5 lb. in the score, and the sandy wool rather more, which greatly enhances the value of what is left; as, if one score Hereford, sold at 2s. 6d. per lb. comes to 2l. 10s. this, if it wastes in washing $3\frac{1}{2}$ lb. per score, leaves but $16\frac{1}{2}$ lb. for the 2l. 10s. one shilling for scouring 2l. 11s. which is rather better than 3s. 1d. per lb. and therefore clean-washed wool is of vast concern to the manufacturer; and by all means possible they should avoid buying or using wool not fully and truly washed.

In some parts of Berkshire, it is said, the farmers wives or housekeepers claim the privilege of a *fleece*, so that it do not exceed a todd weight, 29 lbs. and is usually called "the woman's conscience;" and where it hath been measured, the fleece and band amounted to 39 yards; this is not vouched by me for truth, but only as hearsay, and so you will take it.

These are some loose, desultory remarks, as they recurred to my memory, having been out of the business 14 or 15 years; yet I thought it proper to set down the prices, as they are comparative standards, and by
adding

adding to or subtracting from, as the case may require, every person may thereby be able to pass a better judgment of the matter in hand. Vague terms, which ascertain nothing, only tend to mislead: the Hampshire, the Berks, the Surry, the Isle of Wight, Suffex, Radnor, Shropshire, Herefordshire, Cheviot, Shetland, Portugal, Barbary, Spanish, Vigonia, are all said to be, by their respective owners, very fine wool, as good as any-body's, the best in the neighbourhood. Why should it not? It sells always for the best price, and so on *ad infinitum*. Here is no goal, no road, no map, no guide, but only a mist-maze from beginning to end, and therefore it occurred to me to note the buying and selling prices as near as possible, at the time I allude to. In short, by this means you are possessed of every datum you want as to the above wool countries; and if compared with all the others in England, Wales, Scotland, Shetland, Portugal, Barbary, Spain, nay, the whole world of wool, you may then with safety pronounce this or that county, farm, flock, or fleece, is good, fine, short, or long, as it may be, and thus shew your judgment, without fear of being confronted to your shame by the most knowing.

To the best of my knowledge, what is written, unless otherwise expressed, is according to my own observation and experience. . Not being willing to delay the information expected from me, I have perused the foregoing, hoping, so far as it goes, it will

be satisfactory; but if you or any other person will note down their objections, remarks, questions, or desire of further information on the above, my endeavour will be, so far as my ability will go, to give them all the light therein possible.

J. COLLINS.

Devizes, 24th Nov. 1795.

N. B. It is my^{*}resolution not to enter into any controversy with any person whatsoever; if they do not like what I have written, (it is truth) they may reject it. What care I? I value the content and ease of my own mind^{*} above all earthly enjoyments whatever; for life and time are too precious and valuable to be spent in quarrels or squabbles about who shall say *amen*, or^{*} the last word.

If, on the other hand, it meets with a favourable reception with any to examine, try, or put it in practice, I hope they will have no occasion to say they are deceived; for it was the farthest from my intention, having^o always been ready to communicate any knowledge I have for the benefit of others.

ARTICLE VII.

A Method of Tanning Leather without Oak-Bark, discovered and proved by WILLIAM WHITE, Tanner, of Ashburton, Devon.

I Have tanned several hides and calves skins (these three years past) with oak-leaves only, and have found that the leather is tanned quicker, weighs as well, and answers for wear in all respects as well as if tanned with oak-bark, as hath been proved by several persons who are judges. The leaves which I used were gathered when the coppice was felled, which was about the latter end of May; the expence of which did not amount to the ripping of the oak: the leaves were dried just in the same manner as hay; for if they are put together before they are properly dry, they will heat and spoil. As the oak was felled, there was no damage done in gathering the leaves, as they were thought useless. The leaves are in greater perfection for tanning about October; and I do suppose that the gathering of them from the oak at that time would not occasion any damage, as they otherwise will soon fall off. If the weather should prove wet, they may be thrown into a large room, about two or three feet deep, and turned or tumbled about once a day until dry and fit for use.

I have found by experience that 30lbs. weight of leaves are equal to 1 cwt. of good bark in tanning leather; and do suppose that half the bark that is

used by tanners may be saved by using the leaves. There is no difficulty in using them, as they are used in all respects as the bark. Bark being now so very dear, the above discovery must be of some benefit to tanners. The expence of drying the bark by fire, and pounding and sifting it, is considerable; whereas that expence is saved by using the leaves. The felling of coppices so young as fourteen years growth, hath for several years past reduced the quality and quantity of oak-bark very much; therefore I suppose the above discovery will be of public utility.

We, whose names are underwritten, being tanners, and dressers of leather, have seen pieces of leather which WM. WHITE says were tanned with oaken leaves only, that appear to us to be equal to any tanned with oak-bark, and we think it will be of considerable advantage, to tanners throughout the kingdom; as witness our hands.

WILLIAM HERR	EDWARD LANGMAN
JOHN WINDEATT	RICHARD MAYE
GEORGE LEY	WILLIAM BICKFORD
THO. BICKFORD	WILLIAM BATTEN.

Nov. 5th, 1795.

N. B. Although the foregoing article may neither be so strictly original, nor fraught with such practical advantage, as Mr. WHITE and his friends seem to apprehend; yet, as it may be of some use to be generally known that leather may be tanned with oak-leaves instead of bark, we insert the paper, with full approbation of the publick-spirited motive which induced the communication.

ARTICLE

ART. VIII.

ON PLANTING POTATOE SETS.

Extracted from a Letter to the SECRETARY.

[By JOHN HARVEY PIERCE, esq.]

AS potatoes are now become such an important object of culture, almost every improvement, though apparently trifling, may be thought to deserve attention; I will not therefore let slip this opportunity of communicating to you a mode of *covering with dung my Potatoe Sets*, lest I should forget it the ensuing spring. If you think they may be useful, make what use of it you please. The potatoe sets (with two eyes each) are cut about a fortnight before planting. As I never had one curled, I think the cutting so long before prevents the evil. A few days before I plant, the dung is spread over the ground, then with a double-board plough a furrow is made, and the sets put in about ten inches asunder by children; women and men follow with an implement made with a piece of board 3qrs. of an inch thick, 4 inches deep, and 15 long; a handle is fixed to the board in the same manner as to a common hay-rake; with this implement the dung is pushed into the furrow, on the sets; so that all the dung for about 22 inches parallel with the furrow is applied. The plough then goes back and covers the dung; afterwards two other furrows are made; thus, planting at every third furrow

furrow. At first I fixed a small stick or rod, sloping upwards, to serve as a gage for the distance of the dung to be pushed into the planted furrow; but a little practice renders the gage useless, especially as a small error is of no consequence.

As I write in haste, perhaps the description may not be very clear; if so, and you desire it, I will at any time be more particular.

JOHN HARVEY PIERCE.

New-Park, Axminster, 1795.

ARTICLE IX.

On the rapid Growth of OAK TIMBER.

[By FRANCIS WEBB, esq:]

Clofe of Sarum, 20th Dec. 1795.

SIR,

FOR the information of those who are fond of promoting the growth of naval timber and of planting, and to shew the rapid growth of Oak Timber in soils and situations that are proper for that most useful article, I trust you will excuse me for troubling you with the following statement and remarks.

Measurement

*Measurement of Three Oaks at Dibden near
Southampton.*

1st. As to a young oak said to have sprung up about the year 1755.

	Circumference.	Measure.	Value.
	<i>Inches.</i>	<i>feet.</i>	<i>s. d.</i>
15th August 1776	$32\frac{5}{8}$	4	4 0
18th April 1783	$42\frac{1}{8}$	8	10 0
25th March 1794	$56\frac{3}{4}$	16	24 0

The above oak stands single, is a thrifty tree, but does not appear to grow so rapidly as several others which have not been measured.

2^{dly}. As to an oak now about seventy or eighty years growth.

	Circumference.	Measure.	Value.
	<i>Inches.</i>	<i>feet.</i>	<i>£. s. d.</i>
28th March 1762	$58\frac{3}{8}$	18	1 7 0
19th April 1780	$72\frac{3}{4}$	35	3 5 0
25th March 1794	$81\frac{1}{2}$	$45\frac{1}{2}$	4 15 6

The last-mentioned oak is now a kindly growing tree, but it is observable that after its value exceeded about three pounds it has not paid quite so much as three per cent. compound interest.

3^{dly}. As to a ripe oak, though still growing, without the least appearance of decay:

	Circumference.	Measure.	Value.
	<i>Inches.</i>	<i>feet.</i>	<i>£. s. d.</i>
28th March 1762	105	117	16 7 6
19th April 1780	$118\frac{1}{2}$	150	22 19 0
25th March 1794	$125\frac{3}{4}$	170	27 14 6

N.B. The.

N. B. The above tree has only the stem and one limb measured, and the other limbs now contain about 47 feet.

Though this tree still improves by standing, it is to be observed, that it does not pay one and a half per cent. This shews that there is great temptation to the growers of timber to fell it before it be grown sufficiently large to be useful in the dock-yards, for several purposes where large timbers are absolutely necessary. It is therefore to be wished, that a greater price may be set by government on all trees above 50 feet, and particularly on compass timber and large knees.

The growth of knees may be promoted by cutting off the spire of such young trees as throw out a good strong limb, about three or four feet above such limb; and by layering, or, plashing of saplins, to fix the stem along the ground, from which young shoots will arise nearly perpendicularly, and make the strongest knees, and much sooner than from the limbs of trees.

The growth of compass timber may be promoted by bending young trees, and tying the tops of them together for several years until the stems get fixed.

I am, Sir,

your obedient humble servant,

FRANCIS WEBB.

To Mr. Matthews.

ART. X. *A Detail of several Experiments, with Observations on the Effects of GYPSUM, or PLASTER of PARIS, as a Manure for Sainfoin, Cow-grass, Dutch Clover, &c.*

Gross Weight per perch 6l.	Gross weight per acre. Cent. gr. lb.	Net weight, seed deducted. Cent. gr. lb.	Value thereof of fat & oil. per cwt. £. s. d.	Weight per perch. lb. oz.	Measure per acre at 2½ lb. per bushel. qr. bu. gal.	Value thereof at 40s. per quarter. £. s. d.	Total gross value of the acreable produce in seed and straw. £. s. d.
23	32 3 12	29 0 23	2 3 9½	2 9	2 0 2½	4 1 6	6 5 3½
37	52 3 12	47 2 3	3 11 7½	3 9	2 4 3	5 1 10	8 13 5½
31	44 1 4	40 2 24	1 0 9 7½	2 8	2 0 0 4½	4 0 0 9	7 1 0
24½	35 0 0	33 0 9	9 7½	1 5½	1 0 4½	2 2 9	4 12 4
18½	25 1 20	24 0 8	1 16 0	1 8	1 1 4½	2 7 9	4 3 9
29	41 1 20	38 0 14	2 17 2	2 5	1 6 6	3 13 9	6 10 11
7	44 1 4	42 1 23	3 8	1 4½	1 0 1½	2 0 11	5 4 7
8	18 2 8	17 3 27	7 0	0 6½	0 2 4½	0 12 9	1 19 9
9	27½ 39 1 4	37 2 0	16 3	1 4	1 0 0	2 0 0	4 16 3

THE preceding table is the result of repeated trials upon light loams, and poor calcareous soils, particularly chalky ones, in the years 1792, 1793, 1794, made by a Gentleman of Kent.

I shall first state that all the perches were accurately measured by myself, and the contents when sufficiently dry were tied up in bundles, and weighed previous to their being threshed in the field; each parcel of seed was then put in a bag, tallying with the number of the experiment. I must next observe, that each contrasted perch was taken very near the line of partition, that no difference of the soil might affect their products. As the field was above 100 rods long, I ran the experiments in a straight line throughout, at equal distances, which enabled me to compare the natural products with each other, and the relative effects of the gypsum, according as the staple of the soil varied: at No. 1 and 2, the soil was a very light loamy earth, to the depth of three feet on chalk, which kept gradually rising nearer the surface to the further end, where at No. 7, 8, 9, the surface mould was not more than from two to four inches thick; hence we may naturally account for the product of No. 1, so far exceeding that of No. 8; and it will also shew the immediate as well as permanent effect of gypsum on the two perches

7 and 9, the first gypsomed the 17th of May 1794, the latter in May 1792. But in order to ascertain the superior value of the gypsum products over the foot and natural ones, in a distinct and concise view, I shall adopt the subsequent statement of the total money, products, and balances.

	£.	s.	d.
No. 2. Gypsum, six bushels per acre in			
April 1794 - - - - -	8	13	5½
1. Natural growth - - - - -	6	5	3½

	2	8	2
Deduct the expence of six bushels of			
gypsum, 2s. 9d. per bushel - - -	0	16	6
	1	11	8

No. 6. Gypsum, six bushels per acre in			
April 1793 - - - - -	6	10	11
5. Natural growth - - - - -	4	3	9

Balance in favour of gypsum, the second	}	2	7	2
year after being sown - - - - -				

Note. The gypsum expence balanced in the Saint-foin crop of 1793.

No. 3. Gypsum as before - - - - -	7	1	0
Deduct expence of gypsum - - -	0	16	6

Profit by gypsum - - - - -	6	4	6
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No. 4.

No. 4. Twenty bushels of foot per acre	l.	s.	d.
in April 1794 - - - -	4	12	4
Deduct expence of foot - - -	0	15	0

3 17 4

N. B. The gypsum profit exceeds the foot by 2l. 7s. 2d. per acre.

No. 9. Gypsumed in May 1792 - -	4	16	3
8. Natural Growth - - - -	1	19	9

Balance in favour of gypsum the third year after it was sown - - - -	2	16	6
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Note. The gypsum expence of No. 9, balanced in the crop of 1793.

No. 7. Gypsum 17th May 1794 - -	5	4	7
Deduct expence of gypsum - - - -	0	16	6

Gypsum profit 4 8 1

No. 8. Natural growth - - - -	1	19	9
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Balance in favour of gypsum -	2	8	4
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N. B. The gross amount of the five

gypsum numbers together, is - -	32	6	2½
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The average value per acre - - - -	6	9	3
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The gross value of the 3 No's of natural product, including the foot No. 4, is	17	1	1½
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The average value per annum £.	4	5	3
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I first

I first entered upon these experiments with a view to my own private satisfaction and amusement: the care and attention I bestowed on them have been amply repaid, on finding the results so uniformly decisive and exceeding my expectations.

Having during the progress of these experiments remarked several circumstances, which, though not bearing directly on the point in view, seem of too much importance to pass unnoticed, I shall proceed to state such instances as appeared particularly striking and interesting. Upon comparing the seed value of each number, and the proportion it bears to the respective straw product, the difference appears materially to depend on the depth of soil; and all the first six numbers (except the one sown with foot) exceed their straw value by $\frac{1}{2}$ or $\frac{1}{3}$, or something above par, whilst No. 7, 8, 9, sink below par, in nearly the same proportions; thus,

No. 1, gives—	Straw, value	-	-	-	£.2	3	9
	Seed	-	-	-	-	4	2 6
					Total	£.6	5 3 $\frac{1}{2}$

No. 7, —	Straw, value	-	-	-	3	3	8
	Seed	-	-	-	-	2	0 11
					Total	£.5	4 7

Query, Does not this argue a defect of some peculiar fructifying principle (whatever it may be) in this shallow chalky soil, which even gypsum is not able to impart?—the results at least seem to point out

out the impropriety of feeding sainfoin on such soils; but I think it may fairly be presumed that had both the numbers in question been mown for hay, No. 7 would have exceeded as much as it now falls short of the value of No. 1. And here another interesting matter occurs to me, which is, that I purposely reserved half an acre of the poor chalk, out of which No. 7 was taken, to see what effect the gypsum would have had upon it if sown after vegetation had made some considerable progress; accordingly, on the 17th of May, I had three bushels sown on that part, the sainfoin being then about six inches high, but looking very yellow and unpromising, whilst the greater part of the field, which was gypsomed a month before, had now attained a deep healthy verdure and a vigorous shoot. I must own, there appeared little probability of this late sowing coming to any thing, as the powder hung upon the leaves almost two days, and the weather was apparently set in very dry; a gentle rain, however, falling the second night, washed it all off, and, I suppose, set it to work; for in five or six days I could perceive the sainfoin gain colour considerably, and it continued making such a rapid progress as to bid fair, by the middle of June, to outstrip all the rest. On the 10th of July, I had the sainfoin mown, the seed being ripe, except the half acre, which was suffered to stand a week longer, in order to gain a proportion of seed equal to the rest; but I found at last, there

was

was a great deal of light unripe seed, which in some measure accounts for No. 7 falling short of No. 1 in that article more than half. As this last instance undoubtedly gives a most decisive proof of the instantaneous and astonishing effects of gypsum on sainfoin, I shall here close the experiments and remarks on that plant, and proceed to observe, that

The lower part of the same field was laid down with Cow-grass, sown upon wheat in March 1792; the soil a light loam, to the depth of ten or twelve feet, with a mixture of flints. This part was gypsumed at the times mentioned as above, and the same lines of division for the foot; and intervals where nothing was sown ran directly across both parts. The cow-grass being mown for hay the 7th of July, I measured two square perches, taken within a few feet of each other, just before they were carried to the stack, and weighed their contents, which were as follow:

No. 1 weighed 42lb. per perch, per acre	<i>l.</i>	<i>s.</i>	<i>sd.</i>
60 cwt. at 2s. - - - - -	6	0	0
Charges of 6 bushels of gypsum at 2s. 9d.	0	16	6
	<hr/>		
	5	3	6
No. 2. Natural growth, per perch 15lb.			
per acre 21 cwt. 1qr. 20lb. at 2s. -	2	2	10
Extra profit by gypsum	3	0	8

N. B. This proved remarkably fine hay, and is now worth 4*l.* 10*s.* per load.—This profit comes
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so entirely in unison with those I have stated before, as to require no comment. I shall only state, that the part of the field under sainfoin is worth 6s. per acre, and the cow-grass part 10s. rent.

I shall now enter upon my last experiment, which was upon a piece of Dutch Clover, sown the preceding spring upon wheat. Having my doubts whether gypsum would operate with equal effect upon this plant, as upon the tap-rooted tribe, I only sowed about half an acre with it, upon two distinct patches chosen where the soil varied most in quality; one part being a loose mould four or five inches deep on chalk, the other a kindly stiffish loam to a considerable depth, with a slight mixture of pebbles. The whole piece of clover was about five acres, and upon about three acres of it (the loamy part) there was in general a vigorous but thin plant, of self-sown wheat, which promised in appearance to yield from two to three bushels per acre. This, I thought, added to the clover seed, would help to make out a tolerable saving crop, considering the extreme dry summer. The sequel will prove, however, how much I was mistaken; for by referring to the subsequent statement of the two perches A. B. both gypsomed alike, and having an equal plant of clover, it appears that by suffering the wheat to ripen on B. there was a deficiency on the clover seed amounting to 7l. per acre (a material object, had the three acres of loam been gypsomed) merely to gain

two bushels per acre of wheat worth 15s. which I found the wheat product of the perch amounted to, proportioned to the acre. I have been induced to mention this circumstance, not from its being in any wise the effect of gypsum, but to suggest what useful hints will frequently present themselves in the progress of the most simple experiments, and sometimes indeed of as much importance as the main object in view. Previous to a particular statement of the experiments, it may be proper to observe that the gypsum was sown at the rate of six bushels per acre, on the 22d of May; the clover at that time, particularly on the chalky soil, looked very pale and wanted sap; in a fortnight the gypsumed part might be distinguished at a considerable distance; and tho' we had no rain, yet it soon formed so thick a matt, as effectually defended it from the scorching sun, which nearly burnt up the rest, as may be seen by the scanty products of the two contrasted perches A. and B. as under is the statement of the experiments alluded to.

STRAW PRODUCT OF DUTCH CLOVER.

	Perch.	Per acre.			Net product.			Value at 1s. 6d.		
	lb. oz.	cwt.	qr.	lb.	cwt.	qr.	lb.	£.	s.	d.
A. Gypsum'd	15 8	22	0	16	19	1	14	1	9	0 $\frac{3}{4}$
a. none	5 8	7	3	4	7	1	5	0	10	11
B. Gypsum'd	15 0	21	1	20	19	3	18	1	9	10
b. none	9 0	12	1	3 12	12	1	8	0	18	6

SEED PRODUCT.

	Seed per perch. lb. oz.	Seed per acre. cwt. qr. lb.	Value at 12d. per lb. £. s. d.	Gross amount. £. s. d.
A. Gypsum'd	1 15	2 3 2	15 10 0	16 19 0 ³ / ₄
a. none	0 5 ¹ / ₂	0 1 27	2 5 10	2 16 9
B. Gypsum'd	1 1	1 2 2	8 10 0	9 19 10
b. none	0 6	0 2 4	2 10 0	3 8 6

The results of the gypsum perches sufficiently prove that it operates as forcibly on this plant as upon sainfoin, with respect to gross product; but the value of Dutch clover seed being so superior to that of sainfoin, has occasioned the money value of the seed product A. to exceed the highest sainfoin seed product No. 2, as 3 to 1; and upon deducting the gross natural product *a* from the gypsum product A, it will appear that there is an absolute gain of 14l. 2s. 3d. per acre, at the expence only of 16s. 6d. for six bushels of gypsum. The invariable results of the several experiments, which are faithfully, and I trust correctly stated, do, I think, incontestibly prove that there is a most powerful and subtle principle in this tasteless stone; but by what peculiar agency or combination it is capable of forcing vegetation in such an instantaneus and astonishing manner, is a mystery which time reserves for a ***** or a ***** to unfold. But until this period arrive, the practical and most cautious farmer will, I hope, run no great hazard in venturing some small trials on the credit of the above matters of fact, which I have faithfully and truly stated.

ART.

ART. XI.

On WASTE LANDS and INCLOSURES.

AS the subject of Inclosures, under the powers of a General Inclosure Bill, has engaged of late, and very deservedly, much publick and private attention, it is presumed the following extracts from COUNTY SURVEYS, respecting Waste Lands in those counties, will be acceptable to many of our readers; especially as they are accompanied by seasonable reflections on the important advantages of inclosure.

SURVEY OF CARDIGANSHIRE, page 30.

BY THOMAS LLOYD, ESQ.

The WASTES, unfriendly to cultivation, are very extensive; and, including the tracts only partially cultivated, may amount to near *half* the county. Almost every spot is capable of improvement: where the plough cannot answer, plantations would be very advantageous.

SURVEY OF BERKSHIRE, page 59.

BY MR. WILLIAM PEARCE.

The WASTE LANDS of Berkshire are very extensive, and occupy a great proportion of the county. The Forest of Windsor, Maidenhead-thicket, Tylehurst-

hurst-heath, Wickham-heath, and the numerous commons that are to be found in all directions, contain, without exaggeration, at least 40,000 acres.

In their present wild and uncultivated state, little or nothing is returned by them to the community: except some deer in the Royal Forest, we generally see, on all the commons and waste lands, a number of miserable cattle, sheep, and horses, which are a disgrace to their respective breeds, and the cause of many distempers, which I am persuaded have their origin from the animals which are doomed to the impoverishing subsistence of grazing on them.

The waste lands and commons of this kingdom have, for centuries past, been the theme of many publications, and a subject on which many speculative thoughts have been given. The plans proposed for their improvement have been various, but they have all agreed in the propriety of their cultivation; and complained of the loss the nation sustains by their present neglected state.

At this time, when agriculture is so highly patronized and encouraged, it may be hoped some effectual plans may be established to polish this rough jewel, which lies disregarded, and unproductive, in all parts of this industrious island.

To apportion the waste lands and commons, is certainly an arduous and difficult task. We often find the possessors of large property, as discontented and adverse to any step that leads towards bringing
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this dormant treasure to the community, as the low indigent man, who is interested in no other estate, and has consequently more reason to be tenacious of those little common-rights vested in him.

Yet, though the subject is complicated, the advantages to be derived are so inestimable to the state, and to the individual, that, I trust, the wisdom of parliament will think fit to consider of, and establish some well-digested plans to rescue this long-neglected part of the kingdom from the disgraceful situation it at present exhibits.

Liberality towards the cottager, in allotting him a full allowance for his few prescriptive rights, would, I am convinced, tend materially to prevent his opposition, which has at all times been considered the most insurmountable barrier to the improvement of wastes. The gentleman of landed property, if he duly weighs his interest, and sums up the advantages he must derive from an increase of produce and population, cannot surely hesitate a moment in giving up a greater proportion of this uncultivated land (from which he receives no benefit) than the law at present obliges him; when he has the pleasing prospect in view, of not only increasing his own property, but of seeing a creation of comfort, population, and industry, arise to the state, from a spot before unproductive and unsightly to his residence.

In a national point of view, it matters not by whom the land is cultivated, so as the produce is brought

brought to the community. Following that idea, I will subjoin a comparative statement of the present produce of the wastes and commons, with what it would be, after having been inclosed a few years.

The 40,000 acres of waste in Berks, in its present state, yield hardly any thing to the community: the miserable keep a horse, cow, or sheep, gets on most parts of it, in no direct way returns one penny to the state: but that my calculation may be divested of any partiality, I will suppose each acre produces, by some means or other, to the community, an annual produce of five shillings; the amount on the whole will therefore be 10,000*l*.

If the said 40,000 acres were inclosed, in a few years the community would have a return from it, at least equal to what I shall here state.

8,000 acres in wheat, at 20 bushels per acre, and 5 <i>s</i> . per bushel	£.40,000
10,000 in barley, at 30 bushels, and 3 <i>s</i> . . .	45,000
1,500 in oats, for horses employed in agriculture only	
14,000 in turnips, clover, and the artificial grasses, &c. at 2 <i>l</i> . 10 <i>s</i>	35,000
6,500 in meadow, exclusive of what the farming horses consume, at 2 <i>l</i> . 10 <i>s</i> . . .	16,250
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Annual value of produce from wastes, &c. in Berkshire	} £.136,250

By

By the foregoing statement, there appears a produce, worth upwards of 125,000*l.* lost annually in the small county of Berks only! But let the reflection be carried still farther, by considering, that bread and beer corn, sufficient for nearly 30,000 people, might be thus created; and also an increase of work, that would give full employment to every individual that is now taxing the landed interest for support.*

Combining, therefore, the advantages that may be effected from the cultivation of the waste land, with those I have already recommended, it is not hyperbolical to assert, that Berkshire has immediate resources in itself sufficient to support and employ an increase of nearly one fourth of its present population.

SURVEY OF CARMARTHENSHIRE, page 21.

BY MR. CHARLES HASSALL.

WASTES; upon the calculation already made of the inclosed lands in the district, it remains for observation, that one-third of it is uninclosed and waste.

* A proportionate quantity of the waste land might be applied to the growth of those most important articles, hemp and flax; and independant of the advantages the state must derive from the extension of so valuable a production, the demand for hands to manufacture it in time of war would be great, and divert, in some measure, that stagnation of employment amongst manufacturers that we always experience during hostilities.

Many of these extensive wastes are not common; they are appertenant to the adjacent estates, but for want of dividing them among the tenantry, no inclosure takes place. Of 170,666 acres of waste lands, about one-half may be deemed capable of cultivation, at a reasonable expence, viz. 85,333 acres, and the other half not capable of such cultivation, by reason of its elevation or other difficulties.

- The wastes are now depastured by the occupiers at large, within the several manors to which they belong, without stint; and are thereby rendered of little value to the community; at least they are not so productive as if some rule were established for regulating the depasturing of them.

Stocks of small sheep are kept upon most of the hills, and a few inferior cattle and horses upon some; but the highest hills do not, as I was informed, keep any stock during the rigorous seasons of the year.

I presume the best methods by which the wastes could be improved, may be to divide and inclose them, allotting to lords of manors, and persons having common rights, according to their respective interests; and making compensation to the tenantry, in proportion to the loss they may be found to sustain by being deprived of the pasturage of the commons.

The turf upon many of these wastes is a kind of publick stock, for which the inhabitants of other lordships pay the lord of the manor an acknowledgement for the privilege of digging, and thereby
supply

supply themselves with fuel at an easy expence; it may therefore be thought proper to let all such turf bogs remain uninclosed, and subject to such regulations as may be devised for their future management.

After being inclosed, these wastes may be let to the occupiers of adjacent farms, in proportion to their extent, and the powers of the tenants. Those who have no adjoining lands will probably find their account in erecting suitable buildings, and letting their allotments in separate holdings, taking care to bind the tenants to improve, by proper manuring, and a judicious succession of crops, previous to sowing grass seeds.

Planting forest-trees in many parts of the wastes, may be practised with good effect. In situations sheltered from the west winds, and where loose rocks and large stones render the land unfit for cultivation, oak, ash, beech, sycamore, and all the fir tribe, grow very well. In some of these situations the land is moist, and particularly adapted to the growth of elm, alder, asp, and willow.

The opinions of proprietors of estates in this county seem to be unanimous, that nothing acts so strongly in preventing the improvement of waste lands, as the great expence which generally attends the present mode of obtaining authority to divide and inclose them, by applying for an act of parliament upon every occasion of that sort. People of small fortune dread the expence of these applications so much,

much, that they will rather permit their interests in waste lands to lie dormant, than subject themselves to the greater inconvenience of an expence they are not always able to bear.

To remove this difficulty would perhaps be one of the most popular and beneficial undertakings, in which the Honourable Board of Agriculture could engage. Some of the most intelligent persons I have talked with on this subject are of opinion, that an act should be passed to empower the custos of each county, with the magistrates assembled at the Michaelmas quarter-sessions, to appoint commissioners to divide and inclose any wastes, upon the application of the majority of proprietors in value, under their hands and seals. Such commissioners to be persons no wise interested in the waste proposed to be inclosed; and having been previously chosen by a majority of votes, at a publick meeting of the proprietors, held within the manor or parish in which the waste lies, by notice given on the church door of such parish, for three successive Sundays (during divine service) next previous to the day of meeting.

Such powers as may be found necessary to invest commissioners with; and proper instructions and regulations, as to the making the allotments and paying the expences, may be enacted, so as to answer (it is presumed) all the purposes at present to be obtained by separate acts. It is generally believed in
this

this country, that such an act of parliament would be the means of inclosing every acre of waste land in South-Wales (capable of cultivation) in a very few years.

The commissioners may also be empowered to make such regulations for depasturing so much of the waste lands as may be deemed unfit for cultivation, as they think needful; and likewise to direct the manner of protecting plantations of forest-trees, and the cutting of peat for fuel. The greatest proprietor of waste lands in this county, is Mr. VAUGHAN, of Golden-grove; whose lordships are of extraordinary extent, and many of them exercise regal rights at this day; being part of the ancient duchy of Lancaster.

SURVEY OF THE COUNTY OF CHESTER, p. 63.

BY MR. THOMAS WEDGE.

It is not an easy matter to ascertain what proportion of the waste lands of Cheshire might, in severalty, be profitably converted into tillage, or pasture land: there are, however, very considerable tracts which might be so converted; but, we think the largest proportion thereof would be more advantageously applied to the purposes of planting. The inclosure of waste lands, with a view to either of the above-mentioned purposes, is a business well worth the

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the attention of gentlemen of landed property; the means of promoting such improvements, and of reducing the usual exorbitant expence of them, is an object well worth the consideration of the Board of Agriculture. Several considerable tracts of waste lands have of late years been inclosed, and others are now in contemplation.

SURVEY OF NORFOLK, p. 22.

BY NATH. KENT, ESQ.

There is still a considerable deal of common field land in Norfolk, though a much less proportion than in many other counties; for notwithstanding common rights for great cattle exist in all of them, and even sheep-walk privileges in many, yet the natural industry of the people is such, that wherever a person can get four or five acres together, he plants a white-thorn hedge round it, and sets an oak at every rod distance, which is consented to by a kind of general courtesey from one neighbour to another.

It has long been a subject of infinite conjecture, how the land of different estates became originally so scattered and divided in common fields. Many reasons are assigned. But waving all useless investigation of this sort, I shall briefly consider the disadvantages that land of this description is at present subject to, and endeavour to shew the advantages that would result from laying it more together.

Land,

Land, when very much divided, occasions considerable loss of time to the occupier, in going over a great deal of useless space, in keeping a communication with the different pieces. As it lies generally in long narrow slips, it is but seldom it can receive any benefit from cross-ploughing and harrowing; therefore it cannot be kept so clean; but what is still worse, there can be but little variety observed in the system of cropping; because the right which every parishioner has of commonage over the field a great part of the year, prevents the sowing of turnips, clover, or other grass seeds, and consequently cramps a farmer in the stock which he would otherwise keep. On the contrary, when the land is inclosed, so as to admit of sowing turnips and seeds, which have an improving and meliorating tendency, the same soil will, in the course of a few years, make nearly double the return it did before, to say nothing of the wonderful improvements which sometimes result from a loam of clay; which will, when well laid down, often become of twice the permanent value in pasture, it ever would as ploughed ground. Most striking effects of this sort are to be seen in Leicestershire, Northamptonshire, and other Midland counties.

This, indeed, has been urged by some as an argument against inclosing; as they would infer that it lessens the quantity of arable land too much, and tends to make corn dear; but the excess of grazing
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and ploughing will correct itself. If arable land be laid down, there is a great deal of coarse old pasture land which may be broken up, the turf of which wants renewing; and this old grass land, which could not so well have been spared before, is, of all land, that which is most adapted to the growth of potatoes, hops, hemp, and flax. The markets will ever regulate the proportion of arable and grass land, better than any fixed plan that can be suggested.

If we properly consider the benefits resulting to population from inclosing, (though that, as well as the advantages which might be derived from commons, has been superficially questioned) it will strike us with astonishment. Let the population of England be compared with what it was fifty years since, and I presume it will be found increased nearly one third. If I were asked the cause, I should say, that I believe it is chiefly from inclosing; and my reasons for it are, that in all places where my observation has come, it carries full proof.

I have seen the effects in many parts of England; but I shall subjoin one striking instance in this county. The parish of Felbrigg, belonging to Mr. WINDHAM, consists of about 1300 acres of land, and till the year 1771, remained time out of mind in the following state: 400 acres of inclosed, 100 of woodland, 400 of common field, and 400 of common or heath. By authentick registers at different periods, it appeared that the number of souls had
never

never been known to exceed 124, which was the number in 1745; in 1777, they were only 121; and at this time they amount to 174. This rapid increase I attribute chiefly to the recent improvements made in the parish, by inclosing all the common field land, and by converting most of the common into arable land and plantations. The parish has no particular connection with any other, and therefore its own increase of labour and produce must be the principal cause at least of this striking alteration. The parish of Wyburn, which remains uninclosed in this neighbourhood, belonging to Lord WALPOLE, who possesses, in a very eminent degree, the three great characteristics of a country gentleman, a good magistrate, a good neighbour, and a good landlord, is the most like what Felbrigg was before its inclosure; consisting of about the same quantity of commons and common fields; but I do not find the population there has increased of late, which is a corroborating proof of inclosures being favourable to population.

If, then, inclosing be found so beneficial, every obstruction to it ought to be removed. In the first place, were there one general Act of Parliament formed, under which any parish that could agree in itself should be able to take shelter, or even any two or more persons, agreeing upon any exchange of land, or a separation of a mixed interest, whereby the inclosing of such land was the result, should, upon the payment of a small consideration, receive the

the sanction of a short summary law to bind their agreement. This would insensibly lead to a vast field of improvement. Something of this sort was lately attempted, but not carried through, and perhaps there might be something exceptionable in the plan. It is however to be wished, that some member of the House of Commons would consider the magnitude and importance of the object, and bring it forward again. If such an attempt be made upon sound and rational principles, I flatter myself the present ministry would not be against its introduction; nor, I trust, at a loss to find the means of removing one of the principal objections to the present mode of inclosing, namely, the great expence when a bill is solicited; which always operates as a powerful discouragement to undertakings of this sort, and sometimes sets them wholly aside; especially as the fees are double if another parish has the smallest share in the emoluments, though the trouble to those who pass the act is not doubled by it. But this is not all the discouragement; for in the course of obtaining the bill, the evidence must go up to town, and attend a Committee of the Commons, afterwards be sworn at the bar of the Lords, and attend their Committee also: and as these attendances are often at intervals considerably distant from each other, the evidence must all this time be either supported in town at a great expence, or make three, or four journies; and as this sort of evidence is generally given by professional
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men whose time is valuable, these delays are very inconvenient, and frequently operate so powerfully upon the minds of people, that many an inclosure is passed over which would otherwise be effected. This in a great measure will account for so many of our commons and common fields having remained so long in their present state. In making these remarks, it is not my meaning to cast reflections upon any quarter, but to awaken the attention of the legislature and the Board of Agriculture to the importance of the subject, that all possible encouragement may be given to the honest enterprize of individuals; for all improvements in agriculture, which carry great weight, and in the end become national objects, must be effected by the individual, because it must be the multitude that cultivate the hidden corners of the earth, and “out of a little make a mickle.” Any thing which government could do in a pecuniary way, by encouraging a few persons in a local situation, will never operate so extensively as the natural exertions of the publick: doubtless government will give the individual all the assistance it can, to remove vexatious obstructions, and smooth the road to honest undertakings, which individuals may wish to bring forward.

It is likewise presumed that it would be sound policy in government so to do, as it will ever derive a proportionate advantage from the industry of the people. I trust, therefore, that the legislature will

see the necessity of contriving a less expensive mode of sanctioning inclosures in general, for the good of mankind, as well as its own emoluments.

SURVEY OF NORTHUMBERLAND, p. 52.

BY MR. JOHN BAILEY.

The extent of Waste Lands or open mountainous districts, not capable of affording profit from cultivation by the plough, are very great, considerable quantities of which are private property, and of course may be depastured by sheep or other stock to the greatest advantage; of those that are common, it would certainly be best for every man to know his own share.

Draining would be highly useful to many parts of these districts; there are also many excellent situations for planting, and for all other purposes to which such lands are convertible; this species of improvement seems to us the most promising to make the greatest returns.

SURVEY OF OXFORDSDIRE.

BY MR. RICHARD DAVIS.

There are in most of the uninclosed parishes, either small or larger tracts of Wastes or Down-Land, which are appropriated chiefly to the feed of sheep.
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The range of Chiltern hills, which cross the southward end of the county, are of this description, being in many places too steep to plough. In the more northern parts of the county there are considerable tracts of down-land belonging to most villages, which are often over-run with ant-hills and coarse herbage, being of little value, and chiefly appropriated to the pasturage of young cattle; or sometimes, where they are good enough for that purpose and sufficiently extensive, of oxen for the use of the plough.

The most considerable, and at the same time most valuable, tract of waste land in this county, is the common of Oxmoor, situated near Islip; which contains, as near as can be ascertained, about 4000 acres, and is commonable to eight adjoining townships. This whole tract of land lies so extremely flat, that the water, in wet seasons, stands on it a long time together, and of course renders it very unwholesome to the cattle, as well as the neighbourhood. The sheep are thereby subject to the rot, and the large cattle to a disorder called the moor-evil.

The abuses here (as is the case of most commons where many parishes are concerned) are very great, there being no regular stint, but each neighbouring householder turns out upon the moor what number he pleases. There are large flocks of geese, likewise, kept on this common, by which several people gain a livelihood.

It was in contemplation a few years ago to drain and inclose Oxmoor, and it is a great pity such a valuable tract should not be improved to the utmost, for the advantage at once of the occupier, the proprietor, and the publick.

It is not easy to ascertain the quantity of the other waste or down-land in this county; but it must be great, as there remain at this time upwards of an hundred uninclosed parishes, or hamlets, to which there are wastes belonging in greater or lesser quantities, although on most of them the commonable rights are stinted.

SURVEY OF PEMBROKESDIRE, p. 21.

BY MR. CHARLES HASSALL.

The Waste Lands of Pembrokeshire are estimated at 14,220 acres; capable of being inclosed and cultivated at a reasonable expence, viz.

<i>Wastes.</i>	<i>Proprietors or Lords of Manors.</i>	<i>Contents.</i>
Llanvinnach,	Thomas Lloyd, esq;	4000 Acres.
Hemmes,	Ditto, — —	5000
Maenclocog .	Lord Milford, — —	2500
Maenachlogddee, —	Gwynne, esq; —	1500
Marloes,	George Meares, esq; —	150
Portfield,	Corporation of Haverfordwest,	900
Kingfmoor,	Lord Milford, Mr. Loveden,	170

14,220

Besides

Besides about 8000 acres in the lordships of Llanvernach, Maenachlogdee, Maerclocog, and Hemmes, which lie in too high a region of the air, or are so incumbered with rocks, stones, and declivities, as not to be capable of cultivation, at an expence which the future produce of those lands would repay.

The wastes are now depastured by the occupiers at large, within the several manors to which they belong, without stint; and are thereby rendered of very little value to any one, by being so over-stocked as make it scarce worth while to put stock upon them. If we except a few sheep kept by the inferior farmers living on the verge of these wastes, the profit resulting from them to the publick is very insignificant indeed. I presume the best method by which the wastes could be improved, may be to divide and inclose them; allotting to the lords of the manors and persons having common rights, according to their respective interests; and making compensation to the tenantry, in proportion to the loss they may be found to sustain, by being deprived of the pasturage of the wastes.

The turf upon many of the wastes being a kind of publick stock, for which the inhabitants of the neighbourhood pay the lord of the manor an acknowledgment for the privilege of digging; it may be proper to let all turf bogs remain uninclosed, and subject to such regulations as may be devised for their future management. Common-fields, and all intermixed

intermixed lands, might be exchanged, divided, and inclosed under similar authority.

In regard to the method of occupying the wastes when inclosed, it may naturally occur to the proprietors of adjacent farms, to annex parcels of new land to the old farms, in proportion to their extent and the abilities of the tenants. Those who have no adjoining lands may erect suitable dwellings, and let their allotments in separate holdings; taking care to bind the tenants to improve by proper manuring, and a judicious succession of crops previous to the grass seeds. A tolerable specimen of this kind of improvement is now in progress upon Narberth forest in Pembrokeshire, which was lately inclosed by virtue of an act of parliament obtained by Mr. KNOX, lord of the manor; and a specimen of draining Fennyland may be seen in Castlemartin-Corse, belonging to Mr. CAMPBELL, inclosed a few years ago by act of parliament. Since we know by experience, that ocular observation leads more to agricultural instruction than all that can be written; it seems better to refer improvers of waste land to the specimens before mentioned, than to detail a series of processes, too tedious to come within the compass of this report.

Planting forest trees in many parts of the wastes may be practised with good effect.

In situations sheltered from the West winds, and where loose rocks and large stones render the land
unfit

unfit for cultivation; oak, ash, beech, sycamore, and all the fir tribe grow very well.

SURVEY OF RUTLAND, p. 17.

BY MR. JOHN CRUTCHLEY.

• There are very few Waste Lands in this county. The only improvement I can recommend for them, is to inclose them, as they are all well calculated for tillage: in their present state, a little bad stock is kept upon them; few parts are so well calculated for planting as for tillage.

SURVEY OF SUFFOLK, p. 18.

BY MR. ARTHUR YOUNG.

if there be one object more important than another in the examination of the agriculture of a province, with a view to the improvements that are practicable in it, it certainly is this of Wastes. No person who has reflected seriously on the state of the soil of England, but must be well convinced that there want few instigations to cultivate wastes, but the power to do it, without those very expensive applications to parliament which are at present necessary even for the smallest objects. If the Board of Agriculture be able to accomplish this desideratum, it will merit greatly; and the national interests find themselves advanced

advanced in a degree which no other event whatever could secure. The magnitude and importance of this design cannot be understood, without discovering the extent of these wastes, which will, without doubt, be effected by means of the surveys going on in every part of the kingdom.

I have calculated from much information, of different kinds; and from comparing and combining various data, conclude, that there are in Suffolk wastes to the amount of nearly, perhaps quite, 100,000 acres, or one-eighth part of the whole; comprehended under the terms sheep-walk, common, warren, &c.

It is, however, to be noted, that none of these are, strictly speaking, absolutely *waste*, if by that term is understood land yielding nothing: I include all lands, uncultivated, which would admit of a very great improvement, not always profitably to the tenant (who may on a small capital, make a great interest per cent. by a warren, for instance) but in every case to the publick.

Commons fed bare may seem to yield a considerable produce, but there is often a great deception in it; the cattle and sheep should be fallowed through the winter, and whenever it is found that there is no adequate winter provision, so often the case with poor men's stock, there are large deductions to be made from the apparent produce of the summer.

SURVEY OF SURRY, p. 7.

BY MESSRS. MALCOLM.

Will it not then be a matter of surprise, that at the close of the seventeenth century, there shall be found, in a county like this, commons and wastes of the magnitude of 96,000 acres; the much greater part of which, if not the whole, capable of being made subservient to the purposes of agriculture, and thereby enabling us to supply those foreign markets, that stand in need of it, with that superabundance which, to our shame be it spoken, we draw at this time from Flanders, Holland, and America?

SURVEY OF SUSSEX, p. 95.

BY THE REV. ARTHUR YOUNG.

The Wastes of this county on the northern part of it are very extensive. They are irregularly united by a chain which runs all through this part of Sussex from Hampshire to Kent, intersected in places by cultivated districts. Out of a portion of land, containing 470,360 acres, they occupy no less a space than 90,000 acres of land; and what renders this more singular, the whole range from East to West, within 35 to 45 miles of the capital; all of which, by a judicious management in the cultivation, might not only be converted to the amazing benefit of the
county.

county of which they are a part, but be highly productive to the empire at large. By a very little calculation it can be proved, that this tract of land, under a well-arranged system, might rear up an additional 200,000 sheep to the general stock of the county, besides other cattle in abundance; might produce several thousand quarters of corn, and also be the means of finding employment for several hundreds of families. The soil is at first a discouraging sight, it is almost all of it of a similar nature—a poor black vegetable sand, on a clay marle bottom. Under this sand stone, and over the whole tract, iron works formerly existed. Upon St. Leonard's, within 35 years, above 20,000l. worth of timber has been cut—in the year 1713, 30,000 trees were upon this part. If this soil were properly treated by pursuing a judicious and well-regulated system, something like the following arrangement might be adopted:—

In the first place, if the forest be broken up for the first time, the furze, ling, broom, heath, with all other rubbish whatsoever, covering the surface, should be burnt as it stands, and then pared and burnt from two to four inches in depth; and rye sown the same year, or, if the work be done sufficiently early in the year, a crop of turnips may first be obtained. On this poor sandy soil, care should be taken that the turnips be sown in 'good' time, or they will not arrive to any size; if therefore the turnips be not in
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the ground before, or by Midsummer, rye should then take place, to be spring fed with sheep; and succeeded by turnips; and then with oats, laid down with clover, or sainfoin; to remain as long as the layer continues good, but the longer it is the better for the land, as such a soil is far better adapted to the maintenance of sheep, than it ever can be by being turned over to a state of tillage.

The great advantage of sainfoin is here obvious at first view, if on a medium the present rent of this land, in its uncultivated state, fall short of 1s. 6d. per acre. Wherever the land shall be laid down to sainfoin, after two turnip crops, or a crop of rye and another of turnips, in order to prepare, meliorate, and clear it, all expences will be paid by the two preceding crops and the sainfoin; and after this thorough preparation, which gives time to clear the land, and enriches it with the manure arising from the sheep, the sainfoin will then last good 10 years, and be worth from 15. to 25 rents, without the expence of tillage; and for the next four years may be fairly valued at ten rents per year. It should not be fed after it is mown before Michaelmas, when it will afford a great plenty of grass till Christmas: it must then be laid by for the scythe. It is the best food for lambs at that time of the year, that can possibly be given, being sure to preserve them in a good habit of body—they are particularly fond of it. It is equally acceptable to horses, and no hay in the world
can

can be compared with it. Sheep will feed upon it till Christmas, without the expence either of turnips or hay; and there is no other mode of managing such land that will be found to turn out with such profit, as no other substitute will be found to maintain such a stock. Not quite the usual quantity of oats should be sown with it, that the effect of too large a crop of oats may not destroy the young plant; however, as the land is very poor, this is not material; when it is broken up, a good winter and summer fallow must follow; it must then be planted with rye, and this will bring a surer turnip season than tares, when worms or grubs do not feed on the rye, which they are apt to do when the land is first broken up, more than upon tares, which are bitter: the rye must be spring fed with sheep; and the land, after two or three ploughings, as occasion may require, sown with turnips.

SURVEY OF WARWICKSHIRE, p. 37c

BY MR. JOHN WEDGE.

The Waste Lands of this county, including the roads, I have estimated at 120,470 acres; and, like all other lands, the first step to be taken for their improvement is draining, where necessary. If that be effectually done, or if naturally dry, the propriety of its future use, for the purposes of agriculture or planting,

planting, must depend on its situation as to roads, markets, and manure; and more especially those sorts of manure, lime or marl, which, in the first instance, are most necessary for bringing it into a speedy state of production, and on its being tytheable or tythe free. If, from these circumstances, converting it to wood-land should be found most proper, the nature of the soil will best point out the kind of timber and underwood proper to be planted; but, however this may be, all the new fences or hedges which are hereafter to be made, for the subdivision of waste lands or open fields, ought, in my opinion, to be abundantly planted with all the different sorts of forest trees, adapted to the nature of the soil. This I mention, because it has been much neglected in Warwickshire, and many other counties; an opinion having prevailed, that the injury done to hedgerows, and to the adjoining grounds, by such planting, is more than equal to the value of the timber that can be so raised. I have before supposed the average size of the new inclosures, that have been made in this county, to be fifteen acres; if so, each close, by fencing one side and one end, has 550 yards in length, on which timber might have been planted with the quick, &c. and if five yards and a half be allowed for two trees to be thus planted (which is, I think, sufficient space for a few years, when properly pruned and trained) then each close of that size would have 200 trees, growing on its fences,
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for some years, which might be profitably reduced by taking out the underlings, so as to leave near 100 trees for timber; which in some instances, perhaps many, would, in 100 years or less, be worth the fee-simple of the land they surround, without much, if any, injury to the occupiers; because in closes of that size, their shelter, and protection from cold winds, &c. may probably be equal to every damage done by their growth. From these, and other considerations, it may be found adviseable for gentlemen of landed property, to take the management of all fences into their own hands, as is the case with some whom I know, by which posterity may have an abundance of timber for the navy, and other purposes, and may, looking forward but few years, receive more than an ample recompence for all their expence and trouble. Sutton-Coldfield and Sutton-Park, with the commons adjoining thereto, at Hill, Ash-Furlong, New-Shilton, Berwood, &c. are about 10,000 acres, the greater part of which is a hungry sand and gravel, chiefly covered with ling; but the vicinity of Rushall lime-works, and the town of Birmingham, are circumstances greatly in favour of the cultivation of these vast wastes, which might (I have no doubt) be done with great advantage to the publick, and the land-owners. Colehill and Bickenhill heaths, about 1000 acres, now under improvement, are still of an inferior quality; yet some parts of them will soon become useful land. Balsal heath,

and

and other wastes nearly adjoining, in the parishes of Berkswell, Barlton, Knowle, at Wroxall, Shrewley, Hazely, Lapworth, Packwood, Badefley, &c. are about 5000 acres. These commons, and those in other parts of the county, have a large proportion of land, which, under proper cultivation, would become very useful for the purposes of tillage, grazing, &c.

SURVEY OF WEST-RIDING OF YORKSHIRE, p. 33.

BY MESSRS. RENNIE AND BROWN.

A considerable part of the West-Riding is Waste Land and Moor. It may appear rash to guess at the proportion, but we think it may be computed at one-sixth part of the whole. The quantity is lessening every day, as inclosure bills are frequently passed for that purpose; but still a great deal remains to be done. There are many parts of these wastes capable of great improvement, if divided and inclosed. But the far greatest part would not repay the expence of inclosing; at the same time, it is our opinion, that larches and Scotch firs would thrive in many situations. Wood of these kinds is much wanted, and we apprehend would pay the proprietor well, and contribute to the publick convenience. At any rate, as the wastes are mostly *common*, the proportion belonging to each proprietor ought to be ascertained, which would enable him to improve his share in the manner he may see most advantageous.

SURVEY.

~~estimate~~ the number for this particular purpose. He makes the lands, under the denomination of moss, or fen lands, to be 26,500. Moors, marshes, and commons, to amount to 482,000. Why seek out distant countries to cultivate, whilst so much remains to be done at home?

Many of these lands are incapable of tillage—some consist of mountainous tracts, craggy, steep, and barren. These are employed for sheep-walks, not the most fertile; others of low swamps, overcharged with stagnate water; from which a sufficient fall has not yet been discovered for draining. Many of the wastes covered with underwood, and others, have been planted with varieties of forest-trees. Sir HARRY HOUGHTON purposes to plant Withnell Moor, a tract of about 800 acres, with such trees as, upon trial, shall be found to agree with the soil. Several parts are allotted out, in what are termed dales, for the purpose of paring off the surface for fuel—a pernicious practice, which injures the land, and affords but a very indifferent fire.

There are many thousand acres capable of being cultivated, and made into either arable, pasture, or meadow land, of the very first quality, provided these wastes were inclosed, divided, and improved; and to effect this, there is neither want of inclination or spirit amongst the inhabitants. But there is a want of A GENERAL INCLOSURE BILL, to facilitate that troublesome business, and render it more expeditious and less expensive.

SURVEY OF LEICESTERSHIRE, p. 46.

BY MR. JOHN MONK.

Waste Lands amount nearly to 20,000 acres, and the whole capable of considerable improvement; which in their present state, are of very little value, being depastured with a bad sort of sheep and some young cattle, unrestrained as to quantity.

SURVLY OF LINCOLNSHIRE, p. 29.

BY MR. THOMAS STONE.

The Commons in the Isle of Axholm, surrounding some of the most fertile, strong, loamy, soils in the kingdom, may be here justly instanced. These commons and wastes contain upwards of 12,000 acres, which, divided and inclosed, would, for the

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SURVEY OF LANCASHIRE, p. 52.

BY MR. JOHN HOLT.

In this county there are large tracts of Waste Lands, not less than 508,500 acres, according to Mr. YATES's statement, who took the pains to calculate the number for this particular purpose. He makes the lands, under the denomination of moss, or fen lands, to be 26,500. Moors, marshes, and commons, to amount to 482,000. Why seek out distant countries to cultivate, whilst so much remains to be done at home?

Many of these lands are incapable of tillage—some consist of mountainous tracts, craggy, steep, and barren. These are employed for sheep-walks, not the most fertile; others of low swamps, overcharged with stagnate water; from which a sufficient fall has not yet been discovered for draining. Many of the wastes covered with underwood, and others, have been planted with varieties of forest-trees. Sir HARRY HOUGHTON purposes to plant Withnell Moor, a tract of about 800 acres, with such trees as, upon trial, shall be found to agree with the soil. Several parts are allotted out, in what are termed dales, for the purpose of paring off the surface for fuel—a pernicious practice, which injures the land, and affords but a very indifferent fire.

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most part, make very valuable land, being in considerable parts of a clayey bottom; but in their present state, they are chiefly covered with water, and in summer throw forth the coarsest productions: the best parts, which are those nearest the inclosed high lands, are constantly pared and burnt to produce vegetable ashes to be carried on them, in order to force repeated crops of white grain. The more remote parts of the common are dug up for fuel.

On account of the general wetness of those commons, and their being constantly over-stocked by the large occupiers of contiguous estates, or in such seasons as the depasturage is desirable in summer, to ease the inclosed land, the cattle and sheep necessarily depastured thereon at all seasons, being those of the cottagers, who are for the most part destitute of provision for them in winter, are always unthrifty, and subject to various diseases, which render them very unprofitable to the occupiers.

SURVEY OF MIDDLESEX, p. 18.

BY MR. P. FOOT.

The *Waste Lands* in the county of Middlesex would, if divided, inclosed, and improved, produce fine crops of corn; or forest trees might be reared thereon with little expence. Mr. BOWIE, who is well

well acquainted with every part of Middlesex, informs me that the soil of the waste lands, throughout the county, is well suited to the growth of forest trees; that he would engage to inclose in summer, and plant in autumn, not less than two millions; and that if the Board will pay for labour, he will find plants for three years.

SURVEY OF CUMBERLAND, p. 34.

BY MR. GEORGE CULLEY.

The extent of *Waste Lands* in this county is very great—of mountainous pasture, 342,000 acres, which we suppose not capable of improvement from the plough; yet many parts of these districts might be applied to planting with considerable advantage, and would probably in this way make a better return than if the soil had been in such a situation as to admit of being converted into tillage. We are glad to see a large plantation of larches thriving exceedingly well, on the steep edge of the West side of Skiddaw, lately planted by Mr. STOREY. We hope the example will be speedily, and extensively followed, by every proprietor of similar situations; but, unfortunately, the greatest part of these districts is in a state of common, and no improvement of this kind can take place while they continue in that situation:

ation: of course, the first step to improvement is a division, and for every proprietor to know his own part. If this cannot be done, the only means of improvement then left is to convert them from unlimited commons to stinted pastures.

The present value per acre, of these mountainous districts, may be nearly estimated from the following data:

Mr. GREENHOW, of Thielkeld, takes pasturage for his sheep on Skiddaw forest for a year, at five shillings per score, which is three-pence per sheep; and supposing an acre keeps two sheep, then will six-pence an acre be the yearly value of these mountains. They can scarce be in a less productive state; an acre of wood, if it only grew broom-sticks, would pay much better.

In the less elevated parts of the county, there are many commons, with large tracts of excellent soil, capable of being improved by judicious culture, proper draining, and improved breeds of sheep, to many times their present value; which is certainly very small, probably not more than from one to two shillings per acre. In a county like this, that does not raise corn sufficient for the consumption of its inhabitants, and where it is always one-fourth or one-fifth dearer than in an adjoining county, it is lamentable to see such extensive tracts of *good corn land* lying waste, of no value to its owners, or benefit
to

to the community. Instead of the present scarcity of grain, large quantities might be yearly exported; and instead of the ill-formed, poor, meagre, starved animals that depasture the commons at present, an abundant supply of good fat mutton would be had to grace the markets of the county, and also to fend off large supplies to Newcastle, Liverpool, Manchester, and other populous manufacturing places.

It is difficult to say, what would be the increased value of such land, under proper management; we think we cannot be wrong in stating, that it would be at least from six to eight times the value to the proprietors;—but of what advantage would it be to the publick!

We have already estimated that there are

of improveable commons in the lower	<i>acres,</i>
part of the county - - - - -	150,000
Out of this deduct for bank-sides, proper	
for planting, and other unfertile places	30,000
	<hr/>
There will be left for cultivation - -	120,000
	<hr/>
Suppose this be put into a rotation of three	
years tillage, and three years grass, then	
there will be in tillage yearly - - -	60,000

SURVEY OF ESSEX, p. 9.

BY MESSRS. GRIGG.

Our Waste Lands, including the Forests, may be estimated at full fifteen thousand acres; the greater part of which is as capable of producing corn, after a certain time for necessary improvements, as the adjoining lands, and would in most instances, it is presumed, be made profitable to the community, could some method, such, for instance, as passing a general act of parliament, to ascertain the rights of lords of manors, tithe-owners, and the several tenants; which, it is thought, might be done by proportioning the tenant's claim to the nature and extent, or annual value of his tenements, held of the manor to which the waste belongs, and then enable the lord, who is most frequently more enlightened, and better able to advance the various expences of inclosing and other necessary improvements, to purchase these rights, as a jury should value them, and thus make it worth his while to erect farm-houses and other conveniences, as, without some such power of purchasing, the wastes would be found in most places too small to admit of as many divisions as there would be claims given in, or the ground would be allotted to people, unable; from a want of experience, or property, to render their little portions
of

of much service to the publick, or to themselves. Or if this could be thought, in any respect, exceptionable, if the 29th of Geo. II. c. 36, (by which the lords of manors are enabled, with the consent of the major part in number and value of those who have a right of common, to inclose wastes for the purposes of planting them with timber and underwood) were made general for all other purposes, it might, by degrees, have the same good effect.

SURVEY OF KENT, p. 88.

BY MR. JOHN BOX.

The waste lands, the neglected woods, and the impoverished commons, are so many evidences of the necessity and importance of such enquiries as the present; and the legislature will have abundant merit in suggesting to the proprietors and occupiers of these estates, a plan of improvement from which individuals and the community will derive the greatest advantages.

The commons and waste lands of West-Kent form an extent of many thousand acres, which at present produce very little; though under proper systems of management they might undoubtedly be made of great value. Some of them have a good soil, but in general they are covered with sand, gravel, or stones;

stones; none of these lands, however, are totally unproductive. Inclosures would do much; industry, and due attention to the natural produce, and what has been cultivated on similar soils in other places, would do more. Nature is a wise counsellor, and those who follow her advice can, with the aid of art and observation, do wonders in agriculture.

SURVEY OF BEDFORDSHIRE, p. 26.

BY MR. THOMAS STONE.

Of late years several common fields have been inclosed, but such parishes have not been selected for that purpose, with a direct view to improved agriculture; but in several instances, inclosures have been made of some of those common fields, of which improvement is the least certain, being a thin staple of soil upon very strong, loamy, and clayey land, whilst in several instances, the same proprietors of such common fields were also proprietors, or much interested in the improvement of other open common field parishes, of mixed soil, and light loamy natures, the improvement of which, by means of inclosing, would have been certain.

I must confess myself to be at a loss to account for this extraordinary delay of publick and private benefit; and I can only further observe upon it, that
most

most of such inclosures must have been brought about, from motives not strictly combined with views to improved agriculture.

In but few instances, have we seen improved systems of farming, adopted upon the new inclosures which have taken place; and except Lydington, the property of the Earl of Upper Ossory; Sundon, the property of Sir JOHN BUCHANAN RIDDELL, bart. and POTTON; it does not appear, that any regular systems of farming were laid down upon the inclosing of land, or have been since pursued upon it; but it has been a practice for the persons who were the tenants in the open field state, to take the new inclosed land at a considerable advance of rent, without any knowledge or view towards improved agriculture, and generally without any salutary restrictions as to management, or any example or encouragement towards good husbandry. No wonder that such tenants pursued prospects of immediate gain, without any view to future advantage; the land was cropped successively with the most exhausting crops, it became poor and foul, and such proceedings have brought the measure of inclosing very undeservedly into disrepute in this country.

The town of Bedford is chiefly surrounded by common fields, the soils of which are of the most improveable nature by means of inclosing, whereby the barbarous practices of the common fields might be abolished, and the soil applied successfully to the purposes

purposes of improved cultivation. On account of the vicinity to the town, the land might be laid down in pasture, and applied to the support of trade and commerce; nevertheless the inhabitants are under the necessity of travelling over the arable common fields, now let at from 12s. to 18s. per acre, to inclosed pasture land in other parishes, at a much greater distance, and of less intrinsic value, where they rent it from 2l. to 3l. per acre; and other instances of a similar nature might be adverted to.

SURVEY OF BUCKINGHAMSHIRE, p. 35.

BY MESSRS. WM. JAMES AND JACOB MALCOM.

From the extent of the county, it might have been expected, that a much greater portion of *Waste Land* would have been met with. It does not, however, appear to be above 6000 acres; a quantity very inconsiderable indeed, compared to what is found in other districts. But even this quantity is sufficient to deserve an attention towards the inclosing, cultivating, and planting thereof; as it may be made to supply wood for fuel, for timber, &c. or, where more agreeable, for arable. But as the former appears at present of more consequence than the latter, inasmuch as the country every where falls short of a due succession of timber, and that necessary national article requiring a long time to arrive at a state for use,

use, it might be advisable, perhaps, to appropriate the whole (as near as may be) of these wastes to the growth of timber only. We can import corn, when we cannot import English oak.

It may be objected, that inclosing the waste lands would be considered as materially affecting a particular class of people; but before we can agree to a position so indefinite, and not supported by any proof, let us, for a moment, take a view of the right which these people claim to the commonage or herbage, and see whether the argument will not hold diametrically and pointedly against them. It will be found, upon a very minute enquiry, that, generally speaking, few or no persons have a right of commonage but those who hold the land; and consequently this right, *ab origine*, belongs to the landholder. This being admitted, the due quantum of each holder's commonage would scarcely be worth having, provided each man assumed to himself no more than he had a right to do: therefore, while it is observed, that perhaps not more than one in ten takes this right, and that the tenth takes ten times his share, it follows, that the many are injured, and that every attempt at inclosures will be resisted by him who reaps the greatest benefit.

Again, it may be objected, that so great an increase as bringing the wastes into a state of cultivation, will affect the landholder, by reducing the rent of land; but supposing it did, is that a consideration
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with the publick? And ought that to be put in competition with the good that will arise from it, by increasing the quantum of provisions of every kind, the prices of which it would also tend to reduce, to the very great comfort and ease of the lower class of people, who, in their present situation, can hardly procure the necessaries of life? Has it been upon such narrow principles as these, that this country has attained to its present height in the political scale of Europe? Certainly not. But to remove every ground of fear from the land-owners on this head, we say, that admitting it should be the determination of parliament to inclose these wastes; yet from the nature of such an undertaking, as well as from their several situations, it would be impossible that the whole of them could be brought into immediate cultivation; and therefore the decrease in the value of land could not presently take place. But we have the authority of facts to say, that no such reduction of value need at any time be apprehended, since, it is well known, that (generally speaking) the value of estates is by no means decreased in the respective neighbourhoods of those large inclosures, which have already taken place in the different parts of the kingdom.

The only remaining objection against inclosures is, that the number of cattle, as well as sheep, would thereby be lessened, and that the quantity of wool must of course be diminished, since those who had before

before a right to commonage, would not be able to keep so great a number of sheep as usual. But to this we answer,—That whatever may be the case in other counties, yet in this we are speaking of, the quite opposite effects would most probably follow; and for this obvious reason, the soil of these wastes, as well as common fields, is strong, and holds the wet, so that cattle are little better than starved; and the loss annually sustained by the rot in the sheep, occasioned by the wetness of these commons, is very great, and the wool of a very inferior quality; whereas the inclosing the wastes and the common fields would be the means of draining them all, and would make them wholesome and dry; and even without taking any of the wastes into consideration at all, more sheep and more cattle would be kept in the common fields alone, when inclosed, than are now to be met with in the whole district! Many more arguments might be brought forward to support the expediency of inclosures; but we shall content ourselves with one more, and leave the Board to judge whether it be forcible or not.

If it be true that the population of this kingdom is increased to a very great degree, and that the supply of corn of every denomination, as well as live stock of all sorts, be in no respect equal to its consumption, it must be an object of the first importance to discover by what means the supply can best be increased, so as to answer all the purposes of internal preservation;

preservation; and considering all the existing circumstances of our country, it is clear, upon the very face of things, that one principal step towards attaining this end, would be the inclosing of wastes, inclosing the common fields, and removing those obstacles which clog the operations of the farmer.

SURVEY OF THE COUNTY OF CAMBRIDGE, p. 173.

BY MR. CHARLES VANCOUVER.

By inclosures I understand the *wastes*, for which acts of parliament have been obtained for authority to inclose and divide them. These in this county have consisted of interior commons and wastes of the different parishes, whereon right of commoning was vested in the inhabitants of the ancient mesuages, &c. also of salt marshes, whereon the like right has been exercised. Three inclosures within ten miles of us, Sutton, Gedney, and Tidd St. Mary's, of the former description, have taken place in the course of the last four or five years; the first of about 3300 acres; and two of the latter description, much nearer us—Walpole and Terrington salt-marshes; the first consisting of about 1600 acres, and the last, about 1000 acres. To furnish an idea of the quality of these lands, I will state what I suppose the average rent of them:

Of

Of Sutton, not less than - - - 30s. per acre.

Of Gedney, about - - - - - 20s. per acre.

Of Tidd St. Mary's not less than 30s. per acre.

These were the interior commons and waste-lands of these parishes.

Of Walpole and Terrington, about 25s. per acre; the salt-marshes of these parishes.

N. B. In these values, the extra rents of lands, let for woad and flax, are not considered, but of the lands only let for the common purposes of occupation.

The hazardous situation of the salt-marshes can alone account for the rent of them being inferior to that of interior commons and wastes, as their quality for growing corn is much superior: both these salt-marshes produce the best and biggest crops I ever saw; no part of the crops upon them was destroyed by wire worms, or any other reptile, and their having been so continually and immediately overflowed by salt water, previous to being embanked, may be considered the cause of this.

The crops on the interior commons and wastes suffered extremely by these at first, and still continue to suffer every year in a greater or less degree.

Inclosures appear to increase population; in those made above, cottages are built, which are filled with families: a great proof of their effect in this way is, that the labour in those parishes is double what it was, and it is done with more ease than before. The additional employment seems to attract more
than

than additional assistance, some part of which becomes stationary, and thus the population is increased.

SURVEY OF HAMPSHIRE, page 29.

BY A. AND W. DRIVER.

We cannot take the subject of wastes into consideration without expressing our astonishment, that century after century should be suffered to elapse, without some efficient measures being taken to cultivate the Waste Lands of this kingdom, particularly those belonging to the crown, when it is a very clear case, that, if they were properly managed, they would produce sufficient to pay a very considerable part of the interest of the national debt.

In treating of this subject we do not mean to confine ourselves to this county, as the same argument will hold good in every part of the kingdom; and although there is a vast quantity in Hampshire, yet we apprehend more will be found in other counties, particularly in the adjoining county of Dorset, which now literally produces nothing but heath, besides the downs, which are but little better. Surely, then, it is a national consideration, and no more time ought to be lost, without pursuing such means as will obtain so desirable an end, the execution of which, does not appear to us to be attended with many difficulties; indeed none but what may be easily surmounted.

A GENERAL

A GENERAL ACT OF PARLIAMENT might empower commissioners to adjust the rights of individuals, and make allotments accordingly, as in common inclosure bills; the whole management of which might be under the commissioners of the land revenue, who are fully competent to the subject, having already surveys and reports upon most, if not all, the crown lands and forests in the kingdom. As soon as private claims are adjusted, the remainder of course will belong to government; and it requires very little argument to prove, that it will produce an immense income to the nation, for there is scarce an acre but will produce something considerable. The richest may be applied to agriculture, and the rest for planting. Land in its present state not worth a shilling per acre, will produce good firs, which, if only reckoned at fire-wood price, will yield a wonderful profit; but they will produce much more, as we can ascertain, from repeated observations and experiments, that fir of English growth is nearly as good as foreign, for rough uses, such as joists, rafters, girders, &c. which is the grand consumption.

We do not expect to produce fine clean deals, but those are a very small part in comparison of the whole. Surely, then, if we can supply ourselves, from our poorest land, with a sufficiency of fir timber for home consumption, without being at the enormous expence of importing it from abroad, we are guilty of the grossest neglect in not doing it, and

more particularly, as we do not return goods, but hard cash in lieu of it, which must be a constant drain to this country.

What we have hitherto said upon this subject, relates to the waste lands belonging to government. We shall now briefly state our opinion on that which is private property, of which there is an immense quantity throughout this kingdom. The same argument will nearly apply to this as to the other, excepting that it is, in general, poor land; in which case, the general observation is, that it produces nothing when inclosed. This argument may hold good when applied to agriculture, but cannot with respect to planting, as we can easily prove, that each acre, at the end of twenty-five years, will yield at least 100l. worth of timber and fire-wood, supposing the whole cut down at that period; or if properly thinned, the remainder will continue to improve in the same proportion. We should therefore hope, the great advantages arising therefrom would be a sufficient inducement to gentlemen possessing that species of property, to pursue it upon an extensive scale; indeed we cannot conceive that any gentleman can sit down easy, and say he has discharged his duty to his family, when he is conscious he has neglected to pursue those measures, which in a few years would increase his property so amazingly.

Under this article we shall mention *commonable land*, which belongs to the parishioners in general,
which,

which, being uninclosed, may be considered as very little better than the waste land before-mentioned; as it is self-evident, that cultivated land will produce more than that which is totally uncultivated, and left for nature to pursue her own course; and with this disadvantage, that every one is endeavouring to exhaust it of every valuable production, without paying the least attention to its support and improvement. The very staple itself does not even escape its ungenerous neighbour. All this would be easily remedied by A GENERAL INCLOSURE BILL, which would reduce the expence of inclosures, and would be a spur to that improvement. Perhaps it may be said, that *inclosing commons would decrease the number of sheep, and thereby injure the produce of wool*; but this objection will not hold good, when it is considered, that every acre of land that is cultivated will produce double the number of sheep or other cattle to that which is not cultivated; and we apprehend there are few farmers, who are not already convinced that the greater the number of sheep they can conveniently keep, the more advantageous it is to themselves; and of course, if there be a greater quantity of land cultivated, the greater will be the stock of sheep, and other cattle.

The following are the principal waste lands in the county of Hants, exclusive of the forests, which are particularly described in this report.

East-Woodhay, near Newbury, contains about 1200 acres; it is principally fed with young cattle, and some few horses are bred there, but the horses are of little value; a few good cows, however, are bred. —This would make good arable land, and some part good meadow; if inclosed, would be worth about 7s. 6d. per acre; at present it is of very little value, as there is no timber. The Bishop of Winchester is lord of the manor.

King's-Clear contains about 1000 acres, upon which young cattle of a good sort are now bred. If this were inclosed it would make good convertible land either for the plough or for feeding; but principally for feeding, and would be worth about 15s. per acre.

There is a considerable quantity of waste lands adjoining the above common, which continue thro' the county towards Berkshire.

Froxfield Barnet-Common, containing near 1000 acres, at present produces very little, but if inclosed would be worth 8s. or 10s. per acre. The parishioners have wished to have it inclosed, but upon application to the lord of the manor, who has the great tithes, he refuses to have an allotment of land in lieu of those tithes, for which reason the inclosure, at present, we understand, is dropt.

At Botley, near Southampton, is a considerable tract of land, about 7000 or 8000 acres, of which
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a great part is very useful land for cultivation, and some parts very fit for plantations of firs, timber, and underwood. It now produces very little, but if inclosed would be worth about 10s. per acre.

Waltham-Chace contains about 2000 acres, belonging to the Bishop of Winchester, which, if properly attended to, would produce a great quantity of fine timber; and a considerable part would make fine pasture and meadow land, which would be worth at least 20s. per acre. There is also a considerable quantity of good corn land, which would be worth from 10s. to 12s. per acre.

Bagshot-Heath contains a very considerable tract of land, the greater part of which is in Surry; upon a rough calculation, between 2 and 3000 acres may be in this county. It is principally of a very light sandy soil, and produces very little. If plantations of firs were made, they would thrive well, and become profitable.

The total quantity of waste lands in Hants, exclusive of the forests, but including 5,675 acres in the Isle of Wight, is supposed to be 104,845 acres.

SURVEY OF THE COUNTY OF DURHAM, p. 43.

BY MR. JOSEPH GRANGER.

The *Waste Lands* are situated mostly in the Western parts of the county, and may, by probable conjecture,

ture, amount to 130,000 acres, and being of different qualities, are capable of various improvements; much may be converted into arable, much into pasture, much into wood-land; and even of the mosses, it would be found that many might be drained, and the rest not left useless for the production of peat. Lime, of an excellent quality, is at hand; and altho' the frequency of heavy showers in the Western parts, may endanger corn by lodging it, &c. yet the culture of rape, turnips, and potatoes, for all of which in many parts it is well adapted, would produce immediate profit, and prepare the land for being laid down to permanent grass. Within the last thirty years, large quantities of waste lands in the lower parts of the county have been inclosed; and it is certain that the resulting advantages, in regard to improvement in quantity and quality of produce, stock, rent, and increase of population, have been, and continue to be very considerable. It is impossible to treat this subject of wastes, without lamenting that in some of the rich parts of the county, particularly in the neighbourhood of the capital of it, large quantities of land should still lie totally deprived of the benefit of cultivation, in commons; and that adjacent inclosures, by being subject to the perverse custom of inter-common, be prevented from that degree of fertilization to which the easy opportunity of procuring manure, in most cases, would certainly

certainly soon carry the improvement of them: in their present state, little or no benefit is derived to any person whatever, intitled either to common, or inter-common, from the use of them. By an act of parliament passed about twenty years ago, for dividing *Elvet-Moor*, and for extinguishing all right of common in certain inclosed inter-common lands, it was enacted, that the lands subject to intercommon shall be discharged therefrom, on the proprietors thereof paying an equivalent; to be ascertained by the commissioners under the said act. Their adjudications were executed without any difficulty, and with general approbation.

SURVEY OF THE NORTH-RIDING OF YORKSHIRE,

P. 120.—BY MR. TUKE, JUN.

Though this riding possesses some extensive open arable fields, yet upon the whole the quantity is not large, and they are in some degree annually lessening by inclosures under acts of parliament, and would lessen still more rapidly, but for the great expence of obtaining those acts.

The improvements made upon open fields, and wastes after inclosure, has been very great, principally by the adoption of the turnip and clover husbandry; and by the cultivation of artificial grasses, the stock has been greatly increased in numbers, and still

still more so in value; and the crops of corn rendered so much superior to what they were when the fields were in their open state, and fallowing was practised, that there is nearly as much corn grown as when the whole was arable.

By inclosing waste lands, large tracts of very considerable value are brought into culture, on which is reared or maintained a much more valuable stock than when they were in their original state, besides producing much corn, and increasing the quantity of labour.

SURVEY OF DERBYSHIRE, p. 33.

BY MR. THOMAS BROWN.

Within the last fifteen years, I believe that above one-fourth part of the whole county of Derby has been inclosed—the two districts which I have denominated *fertile* and *low peak*, are almost entirely inclosed; the *high peak* remains a field in many places for that improvement. The advantages arising from inclosing are very great, both to the owner and the community; the advantage to the owner being in some measure governed by the nature of the soil, the quantity of waste, and expence that attends the inclosure and making roads. Some inclosures within the last fifteen years, I have been told, have nearly doubled the rental. Immediately on being inclosed the

the rents advance between a third and a fifth. The increase of the corn does not seem to be in this proportion, for usually on being inclosed much of the land is laid down under artificial grasses, less ploughed, fewer fallows are made, and more of green crops are introduced into the system of husbandry. The quantity of the general produce, however, certainly increases in a greater proportion than the rent; for by inclosing, the capital employed by the farmer is considerably increased, and I think it demonstrable that the more capital a farmer employs in the management of his farm, the greater quantity of produce he carries to market for the use of the community. The stock on an inclosed farm undoubtedly improves; for, no longer subject to the customs of the place, every farmer is at liberty to consult his own judgment in the improvement of his cattle; and experience shews that the stock in the inclosures is generally better than that in the common fields. The nature and size of the inclosures seem to be well understood by the men who have been employed; in general, they have very judiciously adapted the size of the field to the size of the farm; and if I might be allowed to offer a hint for future inclosures, it would be, to consult as much as possible the nature of the soil, and to place the fences, as near as may be, on the spot where the nature of the soil changes. I know it cannot always be done; but I certainly should recommend the sacrificing of a straight hedge;

to attain the acquisition of having the soil in each field of one nature, or as nearly so as it is possible to attain that point: many farms labour under inconveniencies in this respect; for where a field of 20 acres consists of soil fit to graze, and soil only capable of rearing young stock, the disadvantage must be apparent to every one; and in arable fields the disadvantage is still greater, for the culture and cropping that succeeds best on clay is not by any means the best that can be adopted on a gravel,

SURVEY OF THE COUNTY OF DUMFRIES, p. 55.

BY MR. BRYCE JOHNSTON.

Formerly there were several commons (or commonities as they are called) in this county. But, some years ago, the greater part of them were divided among the surrounding heritors, (proprietors of land) in proportion to the servitudes, which the dominant tenements had upon the common, for the years of the long prescription, according to the law of Scotland. Though this law is much more favourable for the division of commons, than that of England, yet the length of time and expence of a process for division of commons are so great, especially when the parties in the process are numerous, that in some instances heritors might purchase as much land of equal quality, for little more money than the expence

expence of the division. There are still a few commons; but the most of these belong to some of the royal boroughs; and the division of them is prevented chiefly by the nature of their charters, or the jarring views and dispositions of the burgessees.

In some parts of North-Britain, and in very many of South-Britain, commons still continue. So strong are the old habits which men have formed from generation to generation, and so very difficult is it to make illiterate or unthinking men change these, even when, like all bad habits, they are equally disgraceful and hurtful to themselves, that it is much easier to point out a method of improving commons highly advantageous to the publick and to the private proprietor, than it is to persuade these men, either to embrace or acquiesce in that mode of improvement. Commonage is so inimical to all improvement of land, and a source of such perpetual contention even to those persons who are so unreasonably attached to it, that though many methods of correcting the present mode of commonage might be suggested, no one of them would be beneficial, permanent, or generally acceptable, to the persons who oppose the division of commons.

In my humble opinion, *a general act of parliament for the division of all commons*, both in South and North-Britain, should be passed. It should fix a method of division expeditious, cheap, and perfectly equitable and fair to every person who hath a right
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in the common. When a common is divided, every person should be allowed to improve his own part of it in the best way he can or will. His own interest, in forty-nine instances out of fifty, would soon lead him to promote the publick good, by making his own lands produce to himself the greatest crops at the most moderate expence. It might be for the advantage of the individuals, and of the publick at large, to give directions, and some pecuniary or honorary assistance, in different parts of the kingdom, to a few publick-spirited and liberal-minded proprietors, or tenants, of some of these divided commons, that, by their example and the richness of their crops, they may lead on to improvements the other proprietors and tenants of the divided wastes,

SURVEY OF STAFFORDSHIRE, p. 66,

BY MR. W. PITT.

The wastes and unimproved lands of this county are very considerable, and certainly, in the present state of population, their cultivation and improvement is very much a national object. The most extensive wastes, or uncultivated spots in the county are, Needwood-forest, Cannock-heath, and Sutton-Coldfield; besides a great number of commons of less extent, and some considerable tracts in the moorlands and elsewhere, appropriated and inclosed, but not improved,

Needwood.

Needwood-forest is a most interesting spot. Here near 10,000 acres of one of the finest soils of the kingdom lie in a state of nature, wild and romantick! beautiful in the eye of the fox-hunter and the sportsman. But, considering the state of population and consumption of landed produce, its continuance in its present state is certainly indefensible upon any sound principle of general policy. Here the warblers of the wood chaunt forth their mellifluous notes, and the herds of deer range at will over the plain, or through the thicket. The fox, and the badger burrow on the declivity of the deep glen, the rabbit on the sandy hill, and the hare hides itself in the thicket. The woodcock, the snipe, the pheasant, and the partridge, abound in profusion; but all often disturbed by their tyrant master—man. ..

The natural disposition of this extensive forest comprehends a great and beautiful variety of aspect. Gradual eminences and easy vales, with meandering rills, and now and then a bolder and more abrupt swell, form the general feature of the forest: a fit subject for any degree of improvement by human art and industry. In the northern parts, particularly within Marchington woodlands, the aspect is bolder. Here the forest is composed of deep glens, surrounded by abrupt precipices; impracticable to the plough, but happily well clothed with wood, amongst which the stout native oak, young, luxuriant, and of vigorous growth, is in great abundance.

ance. On a level with the summit of these precipices is a broad upland surface, capable of being converted to corn or pasture land of a first-rate quality.

The swells or hills of this forest are very generally composed of immense beds of red or white marl, the colour sometimes changing suddenly, so that in a small distance they are as distinct as can be conceived. This marl, of a friable mouldering texture, continues from the very surface to many yards in depth. In some of the inclosed land adjoining, particularly Ad-derley-park farm, it is the same, and both colours have been used promiscuously for marling land with equally good effect; and very probably the white may contain the greater proportion of calcareous earth. The white loamy surface is also equally productive of corn or pasture with the red, and equally esteemed by the farmer. This white marl I had never observed before. The forest is stocked with deer, horned cattle, and horses; but no sheep are suffered to feed on it. The supposed stock may be about three thousand deer, and three thousand of all the other kinds in summer, but much fewer in winter. The keeping of the 3000 horses and horned cattle, charged at 12s. per head for the summering, amounting to 1800 pounds, or about 4s. per acre, is all the advantage that a neighbouring very intelligent farmer supposes the publick derive from this tract, the deer not being managed in any system for the

the publick advantage, or for the supply of subsistence and employment for the bulk of mankind. I shall add for them to the above account one shilling per acre, and five shillings per acre as the total value of the forest to the publick in its present state.

I estimate the capital employed in stocking the forest at 5*l.* per head upon 3000 in number, or 15,000*l.* Although these not being continually kept there, cannot wholly be called forest stock, yet I will suppose that which ought to be taken off on this account to be made good by advantages arising from the deer. The amount of capital employed in stocking the forest will then amount to 15,000*l.* or about 1*l.* 12*s.* 6*d.* per acre, and its value to the publick in its present state as land about 2300*l.* per annum.

The extent of the forest, by an ancient survey alluded to by the commissioners of crown lands in their last examination of it, is nine thousand two hundred and twenty acres; of this, in case of inclosure, I will suppose 1000 acres ought to be reserved for wood-land. This may be done about the glens and impracticable spots, and in other places where thriving oaks are the most promising: there they ought to be fenced off, and reserved in clumps and coppices, which would be both an ornament to the country, and a nursery for stout oak timber. Two hundred and twenty acres I will suppose occupied by the lodges, and other small inclosures. This is already in an improved state; 8000 acres will then
remain

remain for improvement. The moment that these shall have been inclosed, and buildings for occupation erected on them, they will be worth for a term as many guineas per annum, and would be improved to a higher value. The amount of capital employed in such improvement in buildings, inclosure, crops, stock, &c. might on this rich land be 20l. per acre. Deduct the present capital, 11. 12s. 6d. per acre, remains increase 18l. 7s. 6d. per acre; which, upon 8000 acres, adds 147,000l. to the national capital. By improving this tract, the increased annual product would probably be five pounds per acre, or 40,000l. per annum.

Cannock-Heath is the most extensive waste in this county, but its extent cannot be easily determined with accuracy; I estimate it at about forty square miles, or upwards of 25,000 acres. Large tracts of land on the North and West parts of this waste consist of a good light soil, adapted to the turnip and barley culture: the East and South parts are a colder gravelly soil, in many places covered with heath to a vast extent; yet I have no doubt but the whole may be brought into cultivation, and that some of our inclosed land now under cultivation is not at all of a superior quality to this waste.

Sutton-Coldfield is also a very extensive waste, of no other use but as a sheep-walk, or rabbit-warren; that part of it in Staffordshire contains, according to an estimate by a very intelligent resident near the spot,

spot, about 6500 acres; and he supposes the additional waste land between Litchfield and Birmingham, including Bromwich-heath, Aldridge-common, Walsalwood, Wittington-heath, and Weeford-hills, will raise the amount of Sutton-Coldfield to *ten thousand acres*: their value in their present state amounts, by his information, to 3s. 6d. per acre; and if *inclosed* would rise to 10s. 6d. per acre for the first twenty-one years, and afterwards be greater. The other principal *wastes* in the county are those of Swindon, Womborn, and near Stewponey, in the South; Morredge, Wetley-moor, Stanton-moor, Hollington-heath, Caverswall-common, in the North. In other parts of the county we find Calf-heath, Effington-wood, Snead-common, Wyrley and Pelfall commons; Tirley, Ashley, and Maer heaths; Swinnerton, Tittenfor, and Shelton heaths; Houlton, Milwich, Hardwick, and Fradswell commons, and many others; and upon a retrospect of the whole, I cannot put our practicable waste lands, or such as are capable of being brought into cultivation, at less than 100,000 acres. Their present value as sheep-walks amounts to 3s. per acre per annum: their value inclosed, and after one round of cultivation, (tithe free) will amount to 15s. per acre, and improve by inclosure and cultivation, twelve shillings per acre, or *sixty thousand pounds per annum*. The present capital or value of stock belonging to such land may be estimated at 10s. per acre, or 50,000l. the capital of the land; the

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capital of the land, when inclosed and cultivated, including buildings, fences, crops, live stock, implements and furniture, would amount to 15l. per acre, or one million five hundred thousand pounds.

The addition to the national capital, by such general inclosure and improvement in this county, would amount to one million four hundred and fifty thousand pounds. This land also, would make many farms, which, with a due proportion of labourers' tenements, *would employ a population of twenty thousand persons, children and families included, in cultivation and other occupations connected and dependent thereupon; would furnish food for double that number, and would maintain also at least double the present number of sheep, if sheep stock should become the chief object, independent of other stock, which at present draws no nourishment or subsistence from this tract.* Those farms also would produce a proportion of corn: the wool also of the sheep might be increased in weight, and improved in quality, by a due attention to rams and breeding stock. *A general inclosure and improvement by cultivation of all the wastes in the kingdom would by greatly increasing the national capital, and have a proportionable effect upon the revenue; and it is astonishing that the colonization of distant countries should have been so much encouraged, while the cultivation of our own country remains so far from being finished or perfected.*

SURVEY OF WORCESTERSHIRE, p. 17.

BY MR. W. POMEROY.

The *waste lands* in this county contain, at a very low computation, from 10 to 20,000 acres: the medium 15,000. They are in general depastured by a miserable breed of sheep, belonging to the adjacent cottagers and occupiers, placed there for the sake of their fleeces, the meat of which seldom reaches the market, a third fleece being mostly the last return they live to make.

Most of the common, or waste land, is capable of being converted into tillage of the first quality; of this description *Malvern Chase*, extending *some thousand acres*, and enriched by the soil and manure washed down from the extensive sheep-walks on the adjoining hills, and above all well supplied with the waters of the numerous springs, stands foremost; nor is there in this county (rocks excepted) a part not accessible to the plough, but would produce most excellent timber. *As to the present mode of commonage, it is so radically bad as not to admit of improvement, without a total alteration.*

SURVEY OF MONMOUTHSHIRE, p. 24.

BY MR. JOHN FOX.

The quantity of rich land lying in *commons* on the marshes is very considerable. *Greenmoor*, it is supposed,

posed, contains about 500 acres; *Caldecott* about 800 acres; these are the two principal commons. There are several other commons, some of them extensive tracts, lying near to the town of Monmouth, in the way to Chepstow, that might be converted into fine arable and pasture land, if *inclosed*; and also upon the hills there is much waste land, to the amount of *many thousand acres*, that some parts of, at least, might be brought into a state of cultivation, and become much more beneficial, being at present in a state of nature.

SURVEY OF FLINTSHIRE, p. 2.

BY MR. GEORGE KAY.

Although small portions of the *waste lands* have lately been divided and inclosed, yet there are *many thousand acres still left in their original state*, which are very capable of being converted into arable and pasture lands. And, although all the waste lands or commons in North-Wales are denominated mountains, yet many of them are as level as a bowling-green; and in this county they are, in general, not more hilly than the arable lands, nor is the soil inferior in quality, where it is as well cultivated. In Flintshire, the commons are depastured by sheep, black cattle, horses, and asses, belonging to the neighbouring tenants, from which no possible advantage

tage can be derived, as the poor animals, kept in this almost starved state, can never improve; on the contrary, the loss sustained by death throughout North-Wales is incredible. There are many farmers, who, rather than risk their stock on the commons, sell their privilege at the paltry sum of 4d. per head for sheep during the season, and for other cattle in proportion. The expence of improvement cannot be great, inclosing and draining being the chief things required. Coal and lime-stone are got in abundance, and at an easy rate. An acre can be well limed for 3*l*. sterling, and lime, of *all* manures, is the best for land of this description.

SURVEY OF ANGLESEY, p. 20."

BY MR. GEORGE KAY.

The commons, or waste lands, are computed at 5,000 acres, and no division of them is as yet proposed. They are depastured chiefly by sheep, and some of them are inclosed, not with a design to improve the commons, but to prevent those poor starved looking animals from committing depredations upon the adjacent fields,

The greatest improvements that can be made on the waste lands, are, in my opinion, to *inclose* and plant them; the thinnings of which, in a few years, would not only produce a great deal of fuel, but
also.

also paling for the protection of fences, an article very much wanted; likewise, would afford shelter to the fields, and in time become very valuable to the proprietor.

SURVEY OF CARNARVONSHIRE, p. 16.

BY MR. GEORGE KAY.

All the mountains in Caernarvonshire, and also some parts of the low ground on the West side of the county, are *commons*; the mountains are chiefly depastured by sheep, and the low grounds by black cattle. Although it is a practice in this county, amongst the tenants, to meet annually, and to determine what is the proper number of sheep which each ought to send to the mountains, (which is regulated according to the extent or size of his farm,) yet this does not prevent them from being almost always over-stocked; and rather than run the risk of their stock being starved, many sell their privilege at 4d. per head for the season, which is commonly from May, when they are driven up, until Michaelmas, when they are brought down.

Although the mountains in many places are rocky and bare, yet there are a vast number which are green, and would afford *excellent pasture, were they private property, and inclosed*, which would prevent them from being over-stocked.

SURVEY

SURVEY OF MONTGOMERYSHIRE, p. 12.

BY MR. GEORGE KAY.

Full one half of Montgomeryshire, I was informed, consists of *waste lands*, or *commons*, which are chiefly depastured by sheep, and innumerable ponies, with a few cattle; and here, as in other Welch counties, the commons are all denominated mountains; altho' some extensive tracts are to be seen, as far as the eye can reach, without the obstruction of a hill of any consequence. These might be converted into good arable land, (were the present mode of commonage corrected) but at present are lying in a state of nature, without the vestige of a tree or fence to screen them from the blasts to which they are now exposed. After a *division* has taken place, (*which, for the good of the country at large, I hope is not far distant,*) the first thing to be attended to, in the improvement of land of this description, is draining; and the next, sufficient fences and plantations, laid out judiciously, so as to afford proper shelter to the fields. Then crops might be raised that would amply repay the expence of improvement. In conversing with some gentlemen in this county, about improving waste lands, in the manner I have now described, they treated the idea with ridicule, as being chimerical and too expensive. That there are some lands incapable of being improved, or rather, that the
proper

proper method of improving them has not yet been discovered, I will not deny. But the objections stated against the improvement of waste lands in Montgomeryshire were, that they were bleak, and in many places abounded with moss and heath. Their bleakness may be easily accounted for, from the total want of plantations and fences; and as to the mossy lands, I have only to appeal to the improvements made by EDWARD CORBET, esq; in the adjoining county of Merioneth, to whom the gentlemen in this county ought to be very much obliged for his exertions, would they but profit by them. When he first began to improve his mossy or turbary lands, his neighbours looked upon him as a madman, and treated his scheme with the utmost ridicule; notwithstanding which he now draws fifty per cent. per annum for the money laid out, which is the same as buying an estate at two years purchase. Many other instances might be given, were it necessary, where moss has been highly improved; and as rivers and rivulets abound in this county, the flooding of the mossy lands might be practised after being properly drained; which would be attended with great success.

It is a fact well ascertained, that the watering of heathy ground soon destroys the heath, and that abundance of sweet healthy grass is produced. There are many places in Scotland, where the land is now inclosed and cultivated, that formerly presented a more barren appearance than a great part of the waste

waste

waste lands in Montgomeryshire, and pays well for the expence of improvement. The commons in this county are in townships, and the landmarks are well known. The shepherds occasionally pay them a visit to prevent the animals from rambling, or going beyond their limits, which indeed very seldom happens, except in the spring months, when the mares are in season; when it is absolutely impossible to keep them within their own bounds, and is therefore very rarely attempted; but so soon as that is over, they come back to the grounds on which they used to pasture, as if by instinct. The ponies live constantly on the mountains, until they are old enough for the market, and a number of wedders also winter there, (which are looked after by some cottagers which reside on the borders of the commons) neither of which are allowed any other food than what they can gather, and consequently many starve in hard winters.

SURVEY OF MERIONETHSHIRE, p. 10.

BY MR. GEORGE KAY.

The waste lands in Merionethshire are of very considerable extent, and by embanking and draining in some places, and by draining alone in others, might be converted into fine pasture, or hay lands; the
precariousness

precariousness of the weather being much against the raising of corn crops. There are about 600 acres in the neighbourhood of Torvin, adjoining the property of Mr. CORBET, of which, 300 acres are peat or turf, 200 sand, and 100 strong clay, which are not at present worth 6d. per acre; but, by being embanked and drained, might be made worth 20s. per acre, at least. Upon the river Dovey there are 500 acres private property, not now worth 5s. per acre, but, by embanking and draining, might be made worth 2l. per acre; and I was informed the whole expence would not exceed 300l.

At Traeth-Mawr and Traeth-Bychar, there are about 4000 acres, which are common, and capable of the highest improvement, by embanking and draining. Harlach-Marsh, consisting of about 600 acres, is also very capable of improvement, and at a very small expence, as neither much embanking nor draining is required; there is also a great quantity of land in the interior parts of this county that requires to be drained and inclosed.

SURVEY OF DENBIGHSHIRE, p. II.

BY MR. GEORGE KAY.

There are no common arable lands in this county, but several commons to a great extent, at present depastured

depastured by the cattle and sheep belonging to the adjacent tenants; it is needless again to observe, that they are invariably over-stocked and uninclosed. To particularize all the improvements that might be made on waste lands in Denbighshire, would be folly in me to attempt, as the climate and quality of the soil must be consulted, which it was impossible for me to do in an excursion of this kind. But from the best authorities, and my own observations, I can aver, that if a division of them were to take place, a great part might be converted into arable land; and, where water can be applied, (which might be done in many instances) into rich meadows. Draining, inclosing, and planting, ought never to be neglected. The most sterile parts might also be improved; but to attempt that, whilst there were an acre of better land to cultivate, would be the highest imprudence, not to call it worse. No advantages accrue from the present mode of commonage; on the contrary, the balance is very commonly on the wrong side of the ledger.

SURVEY OF HERTFORDSHIRE, p. 50.

There are several small commons and wastes from 20 to 50 acres, and some considerably larger; the whole may contain 4500 acres; great part of these
are

are the sheep-downs skirting the county next Cambridgehire; and other similar sheep-downs producing sweet pasture on a very thin staple. These sheep-downs, if not over-stocked, are valuable in their present state, as they afford pasture for sheep in the spring and summer, and the sheep are folded every night on the light fallows adjoining, and mature them. It is the opinion of wool-staplers, that the wool of sheep so fed is longer in the staple, and finer in the thread, than those fed in inclosures and better land.

The common near Margestreet contains about 600 acres, part of which is said to be in Bedfordshire; this is in general good land, and worth from 12s. to 15s. per acre, per annum; the other commons and wastes, time would not permit me to examine with that attention which would warrant me to give a decided opinion of their value; they are mostly poor, gravelly, or chalky soils. Ashwell cow-common contains about 150 acres of good land. To ascertain the advantage arising to the publick from the inclosure of common-fields, commons, and waste lands in general, the prevailing arguments against inclosing must be seriously considered; and if it shall appear that any description of persons have been injured by inclosures hitherto made, that injury may be avoided in future inclosures, and first,

The injury said to be sustained by the poor.

This

This leading argument, like Aaron's serpent, swallows up the rest, and leans so strongly to the side of humanity, that the best minds are soonest led away by it; I will venture to say, that it has hitherto been in a great measure upheld by this characteristick bias of the country.

The poor here meant are cottagers having common rights; and labourers, or servants employed in husbandry; and if the inclosure of common-fields be considered in one narrow point of view only, the practice will appear to lessen the labour of the poor; for ten, or any given number of acres, lying together, are cultivated in a shorter space of time, and with less labour and trouble, than the same quantity of land lying in separate half acres and roods, and scattered over a large common-field. It will even be admitted, that in many cases three teams will plough the same quantity of land in an inclosed state, which would require four teams in an open field state; the labour of one ploughman, driver, and team, in four, would be sunk by the inclosure, though the land when inclosed may be doubled in value. This land when inclosed will require hedging and ditching; the turnip crops thereon, hoeing; the second crops of clover, cutting and making; one-third more of the land constantly cropped will employ more weeders, and the occupiers of the land be better enabled to pay their labourers their wages.

It

It must be admitted, notwithstanding, that when the land to be inclosed is properly meadow or pasture land, that is, would be of more value if converted to dairy or grazing farms, than continued under the plough, a conversion of this sort would materially affect, and does, wherever it happens, materially affect the poor, who are tied to their parishes by the poor laws, and cannot emigrate with their families in quest of bread.

The scanty allowance of a parish, to alleviate the wants of starving children, is poor compensation to an honest hard-working father, for the loss of that labour by which he had hitherto cheerfully sustained them; and some palliative should be applied to all these heart-breaking cases.

The capital machines of late invention and unrivalled excellence, applied to our staple manufactories, though at first complained of, have added in a ten-fold ratio to the labours of the *infant* poor, and the energy of the manufacturer.

The next item to be considered in the catalogue of injuries is, in my apprehension, of a much more serious nature, and requires the deliberate investigation of the most consummate abilities, before a remedy can with safety be applied; let it be my humble office to point it out.

To almost every common-field, common, or waste within the kingdom, there are cottage rights annexed;

nexed; how these rights accrued, whether by sufferance or otherwise, is now out of the question; they are grown into *prescription*, the great landmark of the sons of the soil; the fulcrum of the best-poized constitution; that human talents ever formed; and which must be touched with due caution.

It will readily be admitted, that the advantage derived to cottagers from this right is in most cases ideal, while the publick sustains a serious loss by lands of this description not being either at all cultivated, or not cultivated to the best advantage.

Nearly the whole of the parish of Ashwell is uninclosed; abounds with cottagers, having common rights over a very good cow-common, containing about 150 acres, a great number of wide baulks and wastes interspersed in the common fields, and the run of the fallow fields, in one of the largest parishes in the county of Hertford. The cottagers of Ashwell have also this peculiar advantage: every cottager is entitled to depasture two cows, and no inhabitant of the parish occupying one house, and maintaining one family, has a right to depasture more, let his holding be ever so extensive; therefore if common rights can advantage cottagers any where, those of the parish of Ashwell certainly will; but very few of these much-favoured cottagers have wherewithal to purchase a cow, and if they had they cannot get provender to maintain her in the winter; the consequence

sequence is, that only eight cows were kept by cottagers in Ashwell in the year 1794. These cottagers have also a right to lead (as they term it) their cows on the baulks and wastes interspersed in the common fields at all times, and while the crops are on the ground.

The exercise of this right is the source of much injury to crops, cultivated with great care and expence, and which have afforded bread to the numerous poor of the parish employed in weeding them. But this right, though productive of little good and much mischief, must not be wantonly annihilated; for the cottager of Ashwell, who has neither the means to purchase a cow, nor provender to feed her in winter, values himself on his common right; he looks with an eye of jealousy on a proprietor or occupier, if he incloses a very small part of the known land, or ploughs but a single furrow from a baulk or waste.

If the cottager cannot purchase now, he cherishes the hope that he may be able to purchase hereafter: this hope may never be realized, but it is his present, and perhaps his future substitute for a cow. A majority in number and value of the land-owners in Ashwell, might, on application to parliament, obtain an act to inclose, and to allot a portion of land to the cottagers adequate to the value of all their common rights, but not adequate to what they now are in their idea, could they exercise them; they would therefore,

therefore, no doubt, grumble at the exchange, though for the better to all parties. The cottagers of Ashwell, though numerous, are by far too feeble to resist the force of an act of parliament; but the cottagers (the poor) of the kingdom, are the many; therefore a general scheme of inclosure must be managed with more dexterity to prevent mischief.

The increase and employment of the hardy peasantry of the kingdom, are objects of first-rate import, and therefore I humbly conceive, that a publick act warranting the inclosure of commons and wastes, in a way less expensive than that hitherto adopted, requiring, as a preliminary, the consent of three-fourths of the cottagers in the parish or place to be inclosed, and guarding, with the energy of patriotism, the interests of the sons and daughters of the soil, would be attended with the happiest effects; as I am satisfied that this consent of three-fourths of the many may be easily obtained, provided they are fairly and honestly dealt with.

As the county of Hertford is by far too narrow and unproductive a field on which to investigate the actual state, and determine the claims of cottagers at large, I must beg leave to refer to what experience has taught me of the actual state of cottagers, as far as that experience has reached. Where wastes and commons are most extensive, *there I have perceived the cottagers are the most wretched and worthless*: accustomed to rely on a precarious and

bond subsistence from land in a state of nature, when that fails they recur to pilfering, and thereby become a nuisance to their honest and industrious neighbours; and if the father of a family of this sort be withdrawn from society for his crimes, his children become burthensome to the parish. ' It may be truly said, that for cottagers of this description the game is preserved, and by them destroyed; they are mostly beneath the law, and out of the reach of detection, and while they can earn four or five shillings, and sometimes more, in a night by poaching, they will not be satisfied with 10d. or 1s. per day for honest labour.* A reform here is absolutely necessary, whether by consent or otherwise; and an inclosure of the commons and wastes will afford these cottagers an honest livelihood, if they think proper to embrace it; if not, brighter prospects will thereby accrue to the rising generation, who may not be so hardened as their progenitors.

Landed properties in manufacturing towns and parishes are heavily loaded with poor-rates, when the manufacturers are not employed; and parishes in which boroughs are situated are, almost without exception, loaded with poor of the very worst descrip-

* Too small encouragement this to pursue honest labour! But we trust the honest labourers in the kingdom are on the average better paid. And sound policy, as well as humanity, requires they should be so paid.

tion: these I leave entirely to the wisdom of the legislature, as any hints of my suggesting may be construed into a parallel between the borough cottagers and their present reformers. I am satisfied that the honest and industrious cottagers every where, to whom commons are of very little advantage, will acquiesce in inclosures, provided their consent be asked, and an equivalent held out to them for their cottage rights.

Though Hertfordshire contains less waste than most counties in the kingdom, there are notwithstanding several small commons and wastes from twenty to fifty acres and upwards therein, which, though no object of inter-commonage to the parishes where they lie, are notwithstanding, when taken collectively, an object of some moment to the publick; and as there are similar small commons and wastes in every county in the kingdom, the object is by that circumstance greatly enlarged; a partition of these commons would not compensate to the persons having common right therein for the expence and trouble of making that partition valid, though none of them will suffer another to usurp his rights, therefore these commons and wastes remain uninclosed.

As it is a matter of indifference to the honourable Board, and to the publick, whether such commons and wastes are cultivated by A or B, provided they are cultivated; the interests of all parties may be concentrated by a publick act warranting the inclosure thereof,

thereof, with the approbation of three-fourths of the land-owners, including the lord of the manor, the rector, or vicar, and the overseer of the poor for the time being, to let their commons for 21 years to the highest bidders, or for the best rent that can be got for the same, giving a preference to industrious cottagers with families; the rents to be applied in the first place towards the discharge of the expences incurred by the inclosure, and for ever afterwards one-twentieth part thereof to the lord of the manor, one-tenth to the officiating clergyman, provided his stipend be less than 100*l.* per annum; and the residue in discharge of the poor-rates, or land-tax, in case of a surplus: future leases to be granted by the same parties or their successors, and the surplus of rent to be received and accounted for by the overseer for the time being. The inhabitants of the parish of Dale may not be disposed to inclose now, if aided by such act; but they may afterwards.

Appeals may be made to the justices at the quarter-sessions, who should in these small matters be the *dernier resort*; and the consent of the parties to the inclosure, &c. be certified by them, and enrolled in chancery, in *perpetuum rei testimonium*.

In common fields where the separate properties are ascertained by buttals and boundals, and are called known-land, in contradiction to commons and wastes, which are called unknown land, the now straggling state of landed property so circumstanced,
though

though of considerable annual value, renders an equitable exchange of lands necessary, to promote the cultivation and improvement thereof. In these cases actual surveys and values must be made, to ascertain with precision the values of the separate properties, and under the direction of commissioners appointed by the general consent of the land-owners. A whole parish is converted into a money value, future and more convenient roads are marked out, an adequate portion of land is allotted to the church in lieu of tithes; the lord of the manor has generally one-twentieth of the common or unknown land, quantity and quality considered, and each separate proprietor has a new estate marked out for him, lying together and as convenient as possible to his home-stall, and duly proportioned to the value of his former estate.

Professional men have hitherto considered the aid of parliament necessary, to confirm the inclosure of property of this sort and magnitude, either before or after the inclosure; as in most cases there are parties interested who are not competent to give their consent.

The chancellor may be empowered to consent for such parties upon petition, and direct issues in cases of disputes or differences among the proprietors. But the interests of cottagers must be attended to, and the consent of three-fourths of persons of this description had, before any publick act of inclosure can, with safety to the peace, and I may truly say, the interests

interests of the publick, be carried into effect. I repeat, that I am satisfied that *this consent of three-fourths of the many* may be easily obtained, provided they are fairly and honestly dealt with, and have separate allotments adequate to the value of their common rights.

It is for the benefit of the state that the cottagers' allotment should enure to his children, the future guides of the helm and the plough; to restrain him from alienating would be unconstitutional; but the cottage and its appertenances may be exempted from all rates and taxes while they remain in the family. The hope of rewards is better calculated to render mankind virtuous, than the fear of punishment.

SURVEY OF NORTHAMPTONSHIRE, p. 29.

Though there is not one acre of waste land in this county properly so called, yet there are many thousand acres in the open field lordships in a state of common pasturage, which, under proper management, might be made to produce abundant crops both of corn and grass, while at present they do not yield pasturage which at the highest computation can be estimated at 5s. the acre; indeed, if the calculation were fairly made, the occupiers are not benefited to the extent of half that sum, as the stock
which

which they send to depasture upon these commons is liable to so many diseases and accidents, as, one year with another, nearly counterbalances any advantages which can be derived from possessing this right; while, on the other hand, the keeping such extensive tracts of land in a state of commonage is attended with one very great disadvantage to the farmers in the neighbourhood, because, while these rights of commonage are continued, no attention whatever will be paid to the improvement of the breed of stock; for it is not to be supposed that a farmer, who depends upon the scanty food which these commons afford for the maintenance of his cattle, horses, and sheep, will ever be at much expence or trouble for the improvement of the different breeds. Without enumerating all the various commons of small extent, situated in different parts of the county, or the nature or extent of the common rights of pasturage, possessed by those who reside in the neighbourhood of the forests and chaces, it may only be necessary here to mention particularly that of

THE GREAT PETERBOROUGH FEN.

A tract of fine level land, containing between six and seven thousand acres, of a soil equal to any perhaps in the kingdom of Great-Britain, and susceptible of the highest cultivation. It is situated between Peterborough and Crowland, towards the North-East

East bounds of the county, and is subject to the depasturage of the cattle, horses, and sheep, of thirty-two parishes or townships in the neighbourhood, which comprize what is commonly called the Soke of Peterborough. The farmers who live in the townships immediately adjoining, consider their right of commonage as of no value to them; and it may therefore be supposed that those who live at the distance of eight or ten miles cannot be much benefited thereby. Indeed, considering the present mode of management, it is impossible that any advantage can arise to the persons having right therein. That it is a valuable tract of land, however, if under proper cultivation, is fully ascertained from the following circumstance:—The annual expence of keeping the drains, bridges, &c. in proper repair is considerable, and the means adopted by those concerned, for raising a fund for this purpose, is to let a certain number of acres to some tenant in the neighbourhood for a course of corn-cropping, for three or four years, when it generally lets at from 3*l.* to 5*l.* per acre. From this account it may be safely stated, that if these six or seven thousand acres were converted into private property, and divided into farms of a proper size, the whole might be rented on leases of moderate endurance, at from 20*s.* to 30*s.* per acre; and it may be further observed, that the produce of these lands, under that system, would exceed

exceed what they now yield, to the extent of many thousand pounds a year, while the additional number of hands, which would be requisite for the cultivation of these farms, could not be short of 1300 or 1400. The advantages, therefore, both of a publick and private nature, which must necessarily result from a division of this common, are so obvious as to require no illustration.

The person who is most materially interested, is Earl FITZWILLIAM, though a great many others are, to a certain extent, concerned. From the truly respectable character of that noble lord, there can be no doubt that a proper application made to him, from all those having interest in the division, would be attended with the best consequences, as, from his disposition to be serviceable to those who reside in his neighbourhood, he would cheerfully embrace so favourable an opportunity of materially promoting their interest. But as the whole inhabitants of these thirty-two parishes may be said to be in some degree concerned, and as it would answer no good purpose to call together so numerous a body of people, it might therefore be proper that a meeting should be held in each parish, and powers granted to one of the most respectable of the inhabitants to meet a person deputed by each of the other parishes, in order to make the application, and procure his lordship's consent to the measure; and if obtained,
of

of which there is no reason to doubt, application might then be made to parliament, which would, no doubt, agree as to the propriety of the division, and pass a bill appointing commissioners to negotiate the business in common form.

Among the various important objects which naturally fall under the consideration of the Board of Agriculture, there are none which, in their consequences, will prove more extensively beneficial, in a national point of view, than their giving every possible aid to those spirited proprietors, who are anxious to promote the improvement of the country, by bringing the commons and waste lands under cultivation, as nothing will so certainly promote or maintain an increase of population.

With respect to what are the best means to be pursued in regard to the common in question, it would be improper in this report to determine. It appears only necessary to repeat, that the improvement of it would give regular employment to a great number of hands, and furnish the publick markets with an additional quantity of several thousand quarters of grain annually; all of which can be effected, without being attended with any bad consequences whatever.

ART. XII.

On the Inconvenience of the present System of TITHES.

Extracted from the County Agricultural Surveys.

THE reasons which induced the Committee to adopt the plan of giving extracts from the County Surveys respecting *waste lands*, have operated in favour of such extracts on the subject of *tithes*. The subject being one of those prominent ones which constantly engage the notice of farmers, and the publick—and being considered in different points of view, by parties differently interested concerning them, it has been thought, that the condensed opinions of numerous surveyors and writers, who had opportunities of observing the local effect of this system, as they proceeded, would be an agreeable and useful article in this publication.

SURVEY OF BERKSHIRE, p. 49.

With respect to *tithes*, the practice generally followed in the present mode of inclosing, of “allotting land in lieu of them,” is certainly a good one; and preferable in my opinion to a corn rent, or any mode which obliges the clergyman to depend on the industry of his parishioners for his income. The only objection that can be raised, is, that the clergyman

clergyman may be forced to become his own farmer for subsistence. But by the same parity of reasoning it should be remarked, a gentleman of large landed property may be also obliged to cultivate his own estate: circumstances not very likely to happen in this populous and wealthy kingdom.

In short, any measure that tends to an alteration in the system of paying tithes in kind, must be productive of signal improvement to agriculture; particularly when it is reflected, how often they are the cause of dissensions and acrimony between a clergyman and his parishioners; for, however just and equitable his demands may be, if an advance takes place, a kind of *irreverence* is often created and cherished, subversive of all good order, and certainly very detrimental to the peace and happiness of the state.

* SURVEY OF CARMARTHENSHIRE, p. 52.

Among the obstacles to improvement in this county, may be stated the local prejudices of the common farmers, and the present mode of paying tithes in kind.

Should the Board of Agriculture be enabled, thro' its united wisdom and influence, to procure the adoption of some eligible plan for commuting the payment of tithes; I do not know of any one measure that would be productive of so much good to the country

at large, to the industrious farmer in particular, and ultimately, to that venerable body, whose support principally arises from that portion of the products of the earth.

• SURVEY OF CHESHIRE, p. 69.

In speaking of *obstacles* to general improvements, the present impolitick, and, in many instances, oppressive mode of collecting *tithes in kind*, must present itself first to our notice. Their operation as a bar to improvements is so glaring, and, amongst disinterested men, so universally admitted, as to need no comment from us. The plan of a commutation for tithes, suggested by Mr. PRYCE, in the fourth volume of the Bath Papers, appears to me much approved; and we have from various quarters been urged to recommend Mr. PRYCE's Essay to the most serious consideration of the Board.

Appendix to Agricultural Survey of Cheshire, p. 79.

“ When the payment of TITHES became a civil obligation, established by custom and the acquiescence of mankind,* a fourth part only was appropriated to the poor.” As the clergy increased in numbers, in wealth, and power, their negligence of the poor also increased, and became at length so glaring, that in England, the great council of the realm

realm found it necessary, earlier than the time of EDWARD the first, to ordain, “that the poor should “be maintained by parsons, rectors, and the parish-ioners.”* How strange! that the holy precepts of religion could not deter the immediate ministers of it from rapacity and avarice!—It is the happiness of the present age to see moderation keep pace with power in the venerable preachers of the gospel.

SURVEY OF NORTHUMBERLAND, p. 61.

In our journey through this county, we found that the payment of TITHES in kind was considered as the chief obstacle to improvement. In our survey of Cumberland we have shewn the great uncertainty of employing money in speculations of improving land, and that the tithes, in such cases, are a large portion of a man’s capital in trade, and not a tenth of the *improved produce* of the earth, which is all that some have believed was intended by the original imposers; as there can be no wish to take any thing from the holders of tithes, but to render them a fair equivalent for what is justly their due, (which there would be little trouble in doing, notwithstanding the many difficulties that have been invented to perplex this most interesting question) it is to be hoped that the time is not far distant, when this great means of national improvement will be brought under the consideration of parliament.

SURVEY OF OXFORDSHIRE, p. 31.

It has long been disputed what is the best system to follow, when *tithes* are to be commuted. In this county, many inclosures have taken place within a few years, wherein all the several methods have been pursued. In divers of these inclosures the land has been left *titheable* as before, because the *tithe-owners* and proprietors did not agree upon terms. In others, an annual rent has been fixed, to be paid out of each estate, varying according to the prices of corn taken at stated times; and this method has been satisfactory in many cases. But the most usual mode is to set out an allotment of land in lieu of tithes, by which both rectorial and vicarial estates are often greatly improved in value: amongst other instances, I am favoured with the particulars (too copious to give here in detail) of a vicarage near Banbury, which improved from 105*l.* to 220*l.* a year immediately upon the inclosure; and at the expiration of a 21 years lease, the value was further considerably increased.

On the subject of commutation of *tithes*, however, if the matter be fairly viewed, it is right, 'briefly at least, to observe what is said on the other side of the question.

It is undeniable that, as matters are at present, agriculture is daily improving, and therefore, though it must be confessed a desirable object to exonerate lands from tithes, yet it may be doubted whether they are so great an obstacle to improvements as sometimes represented.

presented. If a farmer occupies land of two descriptions, one portion titheable, the other exempt from tithes, it is natural to suppose he will be more anxious to manure that which will return him the entire profits, than that from which he is to receive a part only of the produce. He pays a specifick sum for his farm; but from what part or parcel of land the money accrues is indifferent. His attention will be directed to that which, in the least given compass, and with the least expence, will render the largest profits. But cases of this sort, comparatively rare and few in number, are not the proper instances to argue upon.

As to the objection of carrying the profits (when the tithes are taken in kind) to other lands, it is obviated, if the manure so made be properly applied. The profits arising in a parish are expended in the parish; and whether they fertilize private property, or parochial glebe, the general produce is equally improved, and the publick equally benefited.

Of the force of these arguments I hazard no opinion; but I should think myself deficient in the discharge of the commission confided to me, if, together with the most interesting facts, I did not also state the most material observations, which I have heard, or which have occurred to me. That Honourable Board, to whose consideration this report is with all deference submitted, will bestow on the particulars that degree of attention which they shall respectively appear to deserve.

SURVEY OF PEMBROKESHIRE, p. 43.

Another impediment to improvements in agriculture is, the present mode of paying *tithes*. On that subject I have the satisfaction of adding, that in all the intercourse I have had with that respectable and learned body, who are principally interested in tithe concerns, I never met with any one who did not express a wish that some plan could be devised for commuting the tithes of their respective parishes. The lay impropriators are all of the same way of thinking; and as to the farmers, no doubt can arise about their sentiments upon so important a concern. They are, to a man, for a composition in money, instead of paying their tithes in kind. . . .

The act of the 2d and 3d of EDWARD VI. for promoting the cultivation of barren lands, by discharging it from the payment of tithes for the first seven years after the improvement, seems to want an explanation. It is very generally admitted, that the plain and obvious intention of the act was, to promote the improvement of such waste lands as were of their own nature barren, and not capable of producing crops without some extraordinary expence of manuring.

Under this construction of the act, its benefits would extend to all our waste lands, which are every where poor and barren in their natural state.

But by the opinion of some modern lawyers, recently taken upon some cases of this sort, the act aforesaid is explained in such a way as to afford no exemption to our wastes; and this is a most effectual bar to improvement; inasmuch as it gives the rectors too great an advantage. For instance, an acre of barren waste is worth half-a-crown or three shillings a year to let on lease: say three shillings. The tenant, at an expence of about 5*l.* per acre, puts this land into a proper state for a course of husbandry.

Then,	£.	s.	d.
First crop, wheat, worth - - - - -	5	0	0
Turnips (suppose the rector takes nothing from this crop) - - - - -	0	0	0
Barley - - - - -	4	10	0
Clover, - - - - -	2	2	0
Barley - - - - -	4	0	0

Gross produce of crops in five years 15 12 0

The rector takes the tenth - - - - - 1 11 2

The proprietor of the estate receives in this time 15*s.* less than half the amount of the rector's profits, in the same space of time.

To balance so unequal a division of income, between the owner of the soil, and the rector or impropiator; and to allow the farmer some indulgence, as a reward for his extraordinary labour
and

and expence, seems to be a matter of much concern to every one interested in the success of agricultural pursuits.

In cultivating waste lands, it would be equitable to allow the rector as much during the first seven years as the waste usually produced.

SURVEY OF SURRY, p. 87.

In regard to the *second* obstacle to improvement, *the payment of tithes in kind*, we shall take another opportunity of stating our sentiments upon the subject, and of submitting them to the consideration of the Board.

SURVEY OF WARWICKSHIRE, p. 39.

Having here spoken of waste lands, it may be proper to mention *tithes in kind*, as a great, and, in some cases, an insurmountable obstruction to their effectual improvement.

It is but justice to the clergy in this county, to say, that, *on the whole*, they are more reasonable in their demands for tithes in kind than the lay impropriators; and, where lands have been regularly and well cultivated for a great length of time, there is no great hardship in the occupier paying them, as, in that case, it is chiefly a tax on the land-owner,

originating in custom or title, prior to that by which the estate is held; *but where much improvement is wanted, and especially in the cultivation of all fens, bogs, and other barren and unproductive waste lands, the matter is widely different; for in such cases, almost the whole value of the land depends on personal labour, skill, and industry, and the advance and risque of private property: therefore, something seems necessary to be done to remove so great a bar to the improvement of such unproductive land.* Whether corn rents, proportioned to the value of the land, could be adopted, or any other equitable means could be devised for that purpose, the wisdom of parliament, under the suggestions of the Board, is best able to determine.

SURVEY OF YORKSHIRE, p. 18.

TITHES; This is a most important subject, which we shall afterwards have occasion to mention. At present it is only necessary to observe, that they are collected in various ways.

In some parts the small *tithes* are only drawn in kind, and a modus is taken in lieu of great ones. In other parts it is the custom for the tithe-owner to send a person before harvest to value the *tithes* in the parish, and afterwards to deliver an estimate of their value

value to the farmer, giving him the alternative of paying that sum (which for various reasons is generally agreed to,) or having the tithes drawn in kind.

IBID. p. 46.

The next obstacle to improvement is the collection of tithes in kind, or by an annual valuation; and they are a burthen upon agriculture that must ever damp the operations of the husbandman. Indeed where the tenth of the actual produce is drawn, it is peculiarly exceptionable. The tithe-holders may have a right, by the laws of the land, to the tenth part of the *natural* produce of the earth: this we are not to contest; but is it not an impediment to cultivation, that they shall also receive the tenth part of the farmer's labour, and the tenth of the additional crop produced by the improvements he has made, whereby "two stalks of corn have grown, where only one grew before?" Surely not; *unless the drafter is at the tenth of the expence occasioned by these improvements: otherwise he not only draws a tenth of the natural produce of the earth, but also a tenth of the superior cultivation and additional manure bestowed upon the land; and more than that, a tenth of the farmer's industry, merit, and abilities.*

We have already stated that sometimes the tithes are paid according to an annual valuation. Although at first sight this may appear as so much more rent, and is in fact considered by a number of people in that light, yet it operates much more severely upon the

the farmer, than the sum agreed upon by him in the lease to be paid. This we will endeavour now to substantiate.

The rent paid to the landlord is a known definite sum, which neither falls nor increases, whatever crops are raised by the farmer. If by good cultivation, or strength of manure, he raises ever so luxuriant a crop, he only pays the same rent to the landlord as if the ground had produced an inferior one; therefore the farmer, so far as he is concerned with the landlord, receives the fruits of his superior management. But with regard to the tithe-holder, the case is very different; he comes before harvests, inspects the fields, and finding them carrying rich crops, increases the rate of the tithe accordingly.

Instead of paying 5s. per acre, as perhaps he used to do, he is now obliged to pay 10s. or 12s. merely because he has managed his land in a manner superior to his neighbours. The case is exactly in point, if we suppose the landlord's rent were to be fixed by the goodness of the crops: the fatal consequences of which need no illustration. But whatever detriment this might occasion to improvements, it will not be a bit heavier than the other. The landlord has (reasonably) as good a right to a share of the extraordinary cultivation, manure, industry, merit, and abilities of the farmer, bestowed upon the fields he cultivates, as the tithe-holder can possibly claim.

IBID. p. 54.

The commutation of *tithes* has been long ardently wished for by every real friend to the prosperity of his country; and 'till this is accomplished, agriculture must always struggle with great difficulties. We would be the last persons that would wish to injure private property of any kind, or trench upon the rights of so respectable a body as the Church of England, whose learning, character, and merit, require no fresh eulogiums. But surely if the mode of collecting that property be injurious to the publick welfare, and detrimental to its prosperity, some other method ought to be devised by which this tax might be paid, without occasioning such injury.

We have heard of many plans for reforming the tithe system, and which are all attended with considerable difficulty. We are decidedly against giving land in lieu of them, as there is too much land in mortmain already in the kingdom. We shall mention two schemes, either of which will remove the obstacle occasioned by tithes to improving agriculture, and will be attended with beneficial consequences to the tithe-holders themselves.

1st. Let all the tithes be valued by proper persons in each parish, under the authority of a Board instituted for that purpose; this valuation to remain unalterable, and be the rule of payment in all time coming. This would make proper compensation to the holders, whether laymen or ecclesiasticks, and
would

~~would remove~~ the complaints of those who compare the present mode of payment to the *taille* or old land-tax of France, which was collected by the different intendants according to the goodness of the crop.

2dly. There is another plan, which we think best of. After the tithes are valued as aforesaid, let them be offered to the respective proprietors of land at thirty years purchase, which every man, who knows his own interest, would gladly accept in order to get quit of them. The purchase-money, where they belong to the clergy, to be vested in government stock, in name of the particular parish from whence it is produced, and the interest regularly paid to the incumbent. Where the tithes are the property of the laymen, the purchase-money might be immediately paid into their own hands.

Considering the subject in a moral point of view, every well-disposed person must lament that the collection of a tax, purposely given for the support of religion, should be the means of creating disrespect for its ministers. There are no arguments necessary to prove, that, where the clergyman differs from his parishioners upon this subject, the usefulness of his office is totally frustrated; which makes not only the practice, but even the profession of religion, to be disregarded.

IBID. p. 69.

With regard to the tithe-holders, they are, perhaps, of opinion, that the full value of the tithes is as much

much their property, as any landed freehold would be, and therefore may stand justified in their own sight, for a rigorous collection. We have attempted to prove that a collection in kind, or by an annual valuation, is hurtful to agriculture, by operating as a tax upon the farmer *proportionally to his merit and abilities*, and that the publick good requires that a general valuation of them should take place. We have further shewn, that this valuation would not lessen the present amount of the tithes, although it would prevent them from being a continued and increasing burthen upon the possessors of land; and that a payment in this manner would not only be conducive to the publick good, but also promote the welfare and utility of the clergy themselves.

With regard to the interests of that useful body of men, the farmers, we have endeavoured to shew how much their situation would be meliorated, and the practice of agriculture improved, by the proprietors granting leases of a proper duration, free of those useless restrictions and covenants that now subsist in agreements for land, whether annual or for a greater number of years.

These things we humbly submit to the consideration of the Board of Agriculture, and we entertain sanguine hopes, if the improvements we have suggested are sanctioned by their approbation, that this sanction will have a great influence in correcting the abuses we have described,

SURVEY OF LANCASHIRE, p. 86.

TITHES are universally acknowledged to operate as obstacles to improvements; and they fall more heavily upon the spirited agriculturist, than upon the indolent farmer.

SURVEY OF LEICESTERSHIRE, p. 61.

The payment of tithes in kind is undoubtedly an obstacle to improvements. In the new inclosures, a certain portion (generally about one-seventh part) is allotted in lieu of tithes. This plan, however, may in future times be attended with bad consequences, unless particular attention be paid to the property thus given to the church.

SURVEY OF THE ISLE OF MAN, p. 40.

A method of maintaining the clergy, less unpopular than taking the tithe in kind, would excite the farmers to improve and grow a considerably greater quantity of corn than they now do.

It is not uncommon for the clergyman to set the tithe to a tenant, who sub-sets it to another, and so through three or four hands, who have each a profit. By that means the impropiator, or incumbent, does
not

not receive the real value of the tithe, and the farmer, or cottager, is obliged to give the tenth of all his dependance;—a circumstance unavoidably grating and discouraging to the industrious husbandman.

SURVEY OF CUMBERLAND.

It seems unjiverfally agreed, that the payment of tithes in kind, is a material obftacle to the advancement of agriculture.

According to the prefent mode of collecting this tax, it is not a tenth of the *natural produce* of the land, but the tenth of the *capital employed in trade*. If a man employs 100l. in trade, he receives his profits, without any deduction; but if he fhould lay out this 100l. on a fpeculation of improving a piece of land, (fay, draining a bog) he finds, if his fcheme fucceeds, that the produce is not all his own; the tithe-owner comes, and takes away *one-tenth*, (which is probably all the profit, after deducting the common intereft for the money expended;) and ~~this~~ from off land that never afforded any tithe fince the creation, nor *ever would have done*, had not this fpirited improver laid out his 100l. on improving this bog, rather than employing it in trade, where he could have received at leaft ten per cent. for his money. The bog would, then have continued unprofitable, and the tithe-owner would have received

no injury; for neither he, nor any of his predecessors, had ever reaped any advantage from it. This obstacle certainly might be removed, by giving a fair equivalent for tithes, the value of which ought to be estimated, from what the land would produce, without any aid of foreign manure, or extra expences of the nature above stated.

SURVEY OF ESSEX, p. 25.

Another hindrance to the improvements, which men of property and spirit might otherwise make, particularly in regard to waste and uncultivated land, is the present mode of rewarding the labours of the clergy. Could the honourable Board suggest some fair equivalent, which would make that most valuable member of society, the farmer, secure in all the just gains of his laborious endeavours, without injuring the legal rights of the church, it would confer the most substantial benefit on the landed interest in general, assist morality and good neighbourhood, and give comfort to the tithe-gatherer, as well as to the landlord and the husbandman; all of whom, were the subject properly understood, it would not be difficult to satisfy.

SURVEY OF KENT, p. 28.

Isle of Thanet. If a fair commutation for *tithe* could be devised, so as to satisfy all parties, there can be

no doubt but that the produce of this island, great as it already is, would be much increased by the additional crops that would be raised on these barren spots, which would be an advantage to the community in proportion to the additional stock of productions. There would be another very considerable advantage to the publick in the saving of labour, in harvest, by the corn being carried into the occupier's barns, in much less time than it is carried to the parsonage; the latter being frequently at a great distance from some part of the parish, much time is spent in getting the corn home. The value of the difference of the labour, between carrying the tithe corn into the parsonage, and the farmer's barn, is just so much loss to the publick, and if rightly calculated for the whole kingdom, would amount to an immense sum.*

IBID. p. 29.

Among the disadvantages to the publick in the collection of tithe in kind, the quarrels among neighbours, who perhaps would otherwise be very good friends, is a very material one; and more particularly where the tithe-gatherer happens to be the clergyman, (who, of all men, ought to be on the best terms

* The author is a tithe gatherer to a considerable amount, and of course interested in the collection of tithe; but seeing, as he does, the many obstructions to all agricultural improvements, together with many other inconveniences, and losses to the publick, by means of tithes; and being called upon for his opinion, he feels it his duty to give his sentiments.

with

with his parishioners) but this, fortunately, is seldom the case in the isle of Thanet, the tithe there being mostly in lay hands.

For the reasons before mentioned, a commutation for *tithe*, may fairly be ranked among the first of agricultural improvements remaining to be made.

IBID. p. 75.

The rectorial *tithe* is usually paid in kind, and the vicarial compounded for. There have been some disagreements respecting the vicarial tithes in the parish of Minster, which is now settled by paying two shillings per pound on their rent; and an addition to that of six-pence per acre for uplands, nine-pence for marsh lands, and one shilling per acre for mowing meadows; by which an acre of upland, that lets for ten shillings, pays one shilling and nine-pence, and an acre of meadow, that lets for twenty shillings, pays three shillings per acre, or, reduced to a fraction,

The poor land pays	$\frac{8}{40}$	} of its rent in lieu of vicarial tithes.
The middling	$\frac{7}{40}$	
The best	$\frac{6}{40}$	

IBID. p. 103.

The grass lands (except of the parish of Lydd) pay a *modus* in lieu of *tithe*, some of four-pence, some eight-pence, and others one shilling, per acre; and the corn lands pay a composition of from four to six shillings. And some parishes paying the low *modus* for grass, if it is mown, pay one shilling per acre.

SURVEY OF BUCKS, p. 60.

Tithes are every where considered as a leading obstacle to improvements in Agriculture; and altho' there are very few instances, indeed, in this county, where any pointed difference has arisen between the clergyman and his parishioners, yet as that only proves the force of custom and local circumstances, it does not in the least take away from the established truth of tithes being a great grievance in the hands of lay impropriators. On the contrary, daily experience shews us that commuting of *tithes*, even at a very advanced price, is seldom acceded to by laymen; and the difficulty, not to say unreasonableness, of paying for every improvement in kind, is attended with great personal inconvenience, and considerable publick loss.

The farmer who goes on the old beaten track of his ancestors, pays but a very small proportion, compared to the man who aims at improvement; to obtain which, he is necessarily at greater expence, and if his produce be proportionate to his expence, in the same ratio does the burthen of tithes increase also: this is a most vexatious grievance, and in no other instance whatever is there a parallel circumstance.

Is the ingenuity of the mechanick (be it in what line it may) subject to such oppression, at least in such a degree, as to deprive him of a considerable part of
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the profits arising from his ingenuity, although that might be said to come within the meaning of personal tithes? Why then (if the enforcing of these is thought to be an obstacle to the improvement of every art) are predial tithes allowed to stand in exception?

Besides, so undefined is what constitutes great and small tithes, that the farmer is frequently at a loss to know to whom the tithe is due, whether it be to the rector, or the vicar; and hence fresh difficulties and fresh perplexities present themselves to him, and not unfrequently to them.

Formerly the barks, moors, stubbles, and aftermath, were considered by the common law and custom of the realm as not titheable; but modern determinations have settled the contrary.

It may be laid down as a position, that whatever profit arises to the cultivator of the soil by the force of superior ingenuity and industry, should be held sacred both by the church and government. For if it be otherwise, it discourages the improvement of the soil; and thereby the church prevents the future increase of her tithes, and the government the future increase of its taxes.

The tithes, therefore, as exacted in some places, are, to all intents and purposes, as great an obstacle to the improvement of agriculture, as the taille had used to be in France.

Land-owners occupying their own lands are generally disposed to try experiments, and they can best afford to do it. If those experiments succeed, the community are benefited; and if they fail, the loss may possibly be moderate, and will affect only themselves; but if they succeed, and that profit is to be taxed one-tenth, it is, to all intents and purposes, a drawback upon industry.

The landlord, therefore, cannot venture to make the most important, which are generally the most expensive, improvements; nor the tenant raise the most valuable, which are likewise the most expensive, crops; so long as the church, (or lay claimant) who pays nothing of the expence, runs away with so large a share of the profits.

In whatever point of view *tithes* are considered, whether they be in the hands of the clergy, which is placing them in the best situation, and where they were originally designed to be; or whether they are in the hands of the lay impropriator, who, generally speaking, has no other interest in the parish, and is therefore less mindful of being upon good terms with the inhabitants; they are in either case strong obstacles to every improvement upon agriculture.

SURVEY OF HAMPSHIRE, p. 33.

TITHES: This is a subject of great national importance, and which, if properly adjusted, would

prevent much discontent on both sides, which is now daily the cause of disputes and litigation.

If the clergyman, or lay proprietor, agrees to take a commutation in lieu of tithe, there is great difficulty in ascertaining the value; and if he takes it in kind, that is a still greater evil, and causes the claimant and the farmer to be continually at variance, who, on the contrary, ought to live in the utmost cordiality; for it cannot be expected, that much good can be derived from the advice of the pastor, when at variance with his flock. There are doubtless numerous instances where perhaps both parties are to blame, in striving to aggravate each other. We will mention one instance in a parish in this county, which happened last autumn, where tithes were taken in kind. The clergyman and the farmer were at variance; and the farmer, determined to be even with the clergyman, gave him notice that he was going to draw a field of turnips on a certain day. The clergyman accordingly sent his team and servant at a time appointed, when the farmer drew ten turnips, and desired the other to take one of them, saying he should not draw any more that day, but would let him know when he did. This, among many other instances, only proves how desirable it would be to have some plan adopted to prevent these evils, and thereby remove the excuses for complaint in the occupier, and at the same time render the lives of the clergy much more peaceable and happy. However,

ever, in justice to the clergy, we cannot omit saying, we have found much more severity in lay-impropriators than in the clergy.

At all events, it is our opinion, that the clergy or lay-proprietors, should have nothing to do either with the valuing or levying the tithes; but that it should be done by disinterested persons; and although this is a subject that has excited the attention and ingenuity of a great number of people, we cannot pass it by without suggesting our ideas upon the occasion. We shall therefore take the liberty to submit to the Board, whether this complicated and unpleasant subject could not be simplified and adjusted, to the satisfaction of all parties, if the tithes were to be regulated by the rent of the land only; which could be always easily estimated in almost every parish, either from the taxes, or by assessors; which perhaps might be settled at nearly the following proportions:

One fifth of the rent upon arable;

One ninth ditto upon meadow;

One twelfth ditto upon pasture.

However the exact proportions might be settled upon a thorough investigation of the subject, we cannot help thinking this would be attended with considerable advantages, as the farmer would thereby reap the immediate benefit of his own expences and improvements; a considerable portion of which now goes to the proprietor of the tithes, and will ever continue

to be a great bar to improvement; whereas, if our plan were pursued, the value of the tithes would gradually increase in proportion to the rent, which would always be known when the farm is taken; and the farmer can have no reason afterwards to complain; and during his lease, he would have the satisfaction of reaping the benefit of his industry and improvement, without the mortification of seeing (as in the present system) a considerable part of the profit, derived from every load of dung or other manure he lays on his land, taken from him.

SURVEY OF THE NORTH-RIDING OF YORKSHIRE.

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The taking of *tithes* in kind, or advancing the rent of them as improvements are made, are a great obstacle to improvements. Though most of the parishes of this riding are liable to tithes in kind, yet there are many which are exempt from them; and ~~when~~ taken in kind, it does not appear that a rigid mode of exacting them is *generally* practised by the tithe-owners.

SURVEY OF DERBYSHIRE, p. 53.

The collecting of tithes in kind has a tendency to damp improvement, but on one of the largest estates
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in the county of Derby, the agreeing for the tithes is left entirely between the clergy and the occupiers of the land; and although this is not the case on many other estates, yet it is a matter of fact, that no estate in the county is in a better state of cultivation and improvement. So far as this goes, it is a proof that lands may be improved under the present system of tithes, where there is moderation on the side of the clergy, and candour on the side of the farmers.

To render tithes less obnoxious than at present, the rights of the church more equitable, and to preserve individual rights sacred and inviolate, the clergy loved and honoured, and to keep up the happy influence of religion in the state, are objects well worth the attention of every good citizen. To effect this, where the clergyman is not satisfied with a compensation equal to what the land would produce, without the aid of foreign manure, and where he insists on the full tenth of the produce in its improved state, perhaps the most probable means would be to oblige him to pay one-tenth part of the money *bona fide* expended in manures bought and laid on the land. Such a regulation would do away much of the reasonable objection to tithes, and be no diminution to the estates of the church; on the contrary, I think the *value* of her tithes would increase, and a flow be given to the spirit of improvement, by the farmer knowing that a tenth of the money expended therein

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was so much paid towards his tithe. Give me leave to ask any Derbyshire farmer, who brings nine waggon loads of lime to his farm, if he would not bring a tenth, were he sure the titheman must pay for it, if he took the tithe in kind? I am aware of many difficulties that may be thrown in the way of this scheme; the distinction of tithes, as belonging to rector and vicar; the impolicy of obliging a clergyman, whose circumstances might make it imprudent to expend money in the improvement of his tithes; and many others may be raised; but making it optional in the clergy to adopt this measure, or to be content with what he could get if no foreign manure were brought to the land, banishes many objections;† and I have no doubt, if this scheme were taken up with candour on both sides, it might be matured into improvement and the good of the community.

The king's field and tithes are among the greatest bars to improvement; to avoid letting the land to men engaged in other pursuits, or whose talents have not been applied to agriculture; to render every farm sufficiently large to employ both capital and

† It is essential to a fair quotation, that all the ideas of an author should be inserted; but who does not see, that the ascertaining, under circumstances of extraordinary manuring and production of crops, what the real produce would be on the neglecting system, would be attended with much difference of opinion, and consequent dissention?

talents, and so as to render agriculture as much a science as the manufacture of cotton, or any other science; to erect the necessary buildings; to provide for the comfort of the cottager at an easy expence, by allowing him to share in the cultivation of as much land as will supply his family with vegetables and milk; to remove every obstacle that stands in the way of a man that has made agriculture his profession; are, in my humble opinion, sure and rational methods of improving this, or any other county.

SURVEY OF GLOUCESTERSHIRE, p. 23.

It has already been noticed, that this district has been greatly improved of late years, it is still improving, nor is any spirit of that sort wanting; but it might be greatly assisted by the removal of some of the burthens that the farming world in general labours under. Among these, the payment of *tithes in kind* deserves to be mentioned. In the new inclosures, this load has been got rid of by giving up a part of the property in lieu of it. One-fifth of the arable, and one-ninth of the pasture, and in some instances, two-ninths of one, and one-eighth of the other, has been asked, and agreed to. As the impropiator is exonerated from all expences, except inside fences, the part that he takes is more than equal to a fourth

fourth of the arable land, even when one-fifth is allowed; but even then the improvements being entirely the proprietor's, they have been obliged to acquiesce. The acts of parliament allow the rectors only to lease for the first twenty-one years, and afterwards the tenants remain tenants at will; in consequence of which, all the lands set apart for the clergy become, in a great measure, unproductive, as the tenants take from them, all they can raise, and set every improvement aside; and therefore they are so far neither beneficial to the clergy, or the nation. But were commissioners appointed to value the tithes of the parishes, and also the landed estates of the clergy; and were they obliged, under that valuation, to grant leases, at the rent then set on them, their estates would be improved, in proportion as other lands; and the tithes being secured to the occupiers for a term, not exceeding twenty-one years, they could have no objection to the advance to be made on them at the expiration of that term; and the difficulties now existing would be done away, so far as respects the occupiers and the nation. The rent to be paid for the land would be of no consequence in what proportion it was paid; as the only security requisite to the occupiers is, that on laying out their capital they may have from the impropiator an equal term with that they have from their landlords; and to put both on an equal footing. As the law

now stands, the burthen may be immoderate, and therefore to every person acquainted with the value of money, (which the farmers now are more than formerly, and know how to make calculations) it cannot be expected that they will lay out any considerable sum, when the first eleven per cent. profit goes to the impropiator, before they can receive any advantage themselves: and, in case of a loss, that loss is augmented by the impropiator's taking a tenth part of the capital laid out, as far as it was returned to the occupiers.

SURVEY OF WILTSHIRE, p. 163.

It may, perhaps, be expected by some, that in speaking of obstacles to improvements in agriculture, the payment of tithes in kind should be mentioned, and some plan proposed for its abolition. But it is not to be expected, that so great an alteration in the policy of the kingdom, involving so many valuable interests and important consequences, can be effected from the crude and undigested schemes of an humble individual. The Board of Agriculture may, perhaps, hereafter be able, from the combined information that will be collected by them, to determine whether any thing can be done in this important business, and what measures are the most likely to give general satisfaction to the parties interested.

But,

But, however the payment of tithes in kind may be an obstacle to the agriculture of the kingdom in general, it is but common justice to the clergy of the county of Wilts to remark, that, *so far as respects them*, that obstacle can hardly be said to exist. In many of the late inclosures, commutations, either in land or money, have been accepted, and the parishes discharged of tithes. And where tithes are still due, it is a fact, that there is scarcely one clergyman in twenty, throughout the county, who takes them up in kind; although the laymen, who are in possession of tithes, too often set them the example of refusing to compound them at any price whatever.

SURVEY OF HERTFORDSHIRE, p. 74.

Where the land is *tithe free*, and occupied by the owner, his interest, (if he knows it) and that of the publick, exactly tally; the land will be brought to, and continued in a proper state of manurage: it is possible, in such cases, that the publick may have the best of the bargain; and land thus circumstanced, though of the very worst quality, be mended for ever, and at an expence for which that amendment will never compensate to the improver, who, actuated by a hope of future gain, which may never be realized, or the honest pride of decorating his rocks
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and sands with the cheerful face of smiling plenty, will build his tower before he calculates his expence. But if the rector is to share crops, he will *balance*; a few plain figures will settle the profit to the rector, and the loss to himself; the lands will remain uncultivated, and the publick never be benefited by the crops they would otherwise yield. In every case where tithes in kind are payable and insisted on, improvements slacken. This general rule will be found without exception; and a great majority of the Hertfordshire rectors are so sensible of this important truth, that they are satisfied with moderate compositions; the measure thereof following the improvements with a slow and steady pace, while a living profit to the improver is constantly kept in-view. Were it not for this prudent moderation, there would be an end to boning, chalking, top-dressing, and the other very expensive improvements of the county. •

A numerous tenantry has long held by lease or otherwise under a respectable family, on whose honour they could rely. Where the evils complained of in bargains between landlord and tenants, and where a course of husbandry often prescribed, which in many unforeseen cases cannot be pursued without injury to all the parties concerned, did not exist; the rector always copied the example of his patron, and the lands were kept in a proper state of manurage.

The property so held and circumstanced, like the fall of empires, falls into the hands of a new landlord by purchase. He is too wise to be guided by the experience of others, and is absurd enough to give out that he means to grant no fresh leases: he is accompanied with a rector, who insists on extravagant compensations, or tithes in kind. The tenants at will immediately cross crops, and continue that practice till they are turned out; and they whose leases are nearly expired farm accordingly, or submit to unreasonable restrictions, and an advance of rent, to obtain a few years longer term: but as these restrictions, and all human laws, have the same source, they have also the same fate; if mankind were perfectly virtuous, neither would be necessary or wanted. The tenant avails himself of this addition to his lease, to wear out that amendment he formerly put into the land, and having accomplished this object, quits the farm at the end of his lease.

Having thus given, as I hope, a due preference to landlords and rectors of a certain description, I shall endeavour to match them with tenants. A farm is to be let to a tenant at will, at a certain annual rent; a farmer, who really has sufficient property, no matter how he acquired it, views the farm, and perceives that something is still left to be taken out of the lands therein; he considers that he is to be tenant at will; therefore under no covenants or restrictions

strictions, as to his cropping, and that he can leave the farm at any time, giving six months notice prior to the quarter-day on which he may enter; therefore agrees for the farm. He does not condescend to bestow a thought on the rector; he may take his tithes in kind, if he thinks proper, as the dung to be made from the straw thereof would be no object to a farmer of this sort; but he will give the rector all the trouble and hindrance in his power, in the collection of the tithes, and cheat him if possible. Should the rector be so simple as to bring an action on the statute against this bird of passage, for the tithes literally subtracted, he will take care to make the tithes pay the expences incurred in foiling the rector, as long as he can. In two or three years after he has commenced tenant, he will apply to his landlord, who possibly by this time may have smelt a rat, and tell him his farm is too dear, and he can hold it no longer without a lease, and a diminution of rent; if they do not agree, he will apply the plough to the meadows and old pastures, if any in the farm, and make sure of one good crop of oats, before he gives his landlord notice that he means to quit it. If the landlord, to save his meadows and pastures, should agree to his terms, he must give him also a good marketable lease, and which he assigns as soon as he can, provided he gets a premium to his liking; for farmers of this sort never farm, their practice

practice is the very reverse: covenants are made to bind them, for the same reason that halters are made to hang rogues, but with less benefit to society.

The honest and industrious farmer sees and laments the necessity of covenants between landlord and tenant, and would cheerfully comply with them, provided they did not frequently, in conjunction with seasons and circumstances, which human prudence cannot foresee, militate against his own and the publick interest.

A tithe-free arable farm, of poor, light soil, or any soil if out of condition, must be improved by money, and upheld by expence and industry; and if the annual rent or value be 100*l.* the capital of the occupier should be 600*l.* at least, in addition to a competent knowledge of his profession, and a lease to protect his improvements: the sooner the farm is brought into a proper state of culture, the better it is for the occupier and the publick. It is most likely, admitting no accidents intervene, that all his ready-money may be expended before the farm makes a suitable return; in that case, a little indulgence from a landlord, so amply secured, may be necessary, and should never be refused; the tenant will not wish to deviate from any judicious course of husbandry that has been prescribed to him, except when that course is deranged by the immediate interposition of providence. In
such

such cases, a different crop to that which has been sown in rotation and has missed, should intervene, and the choice of the intervening crop be left to himself. This choice may not meet the approbation of all parties, but it will shorten the exceptions thus rendered necessary to the covenants in a lease, and the land will not be suffered to run to weeds, the worst of all possible crops, while the landlord and tenant are settling punctilios.

The tenant will continue a judicious and profitable course of husbandry, as long as the returns are insured to himself; but towards the last years of his term he will relax, if an adequate reward be not held out to insure his perseverance; and if that reward be nearly equal to any advantage he could reap by pursuing a less praise-worthy conduct, the injury to the publick would be avoided, the succeeding tenant would cheerfully disburse that reward, increase the rent of the farm, if really worth an increase, and take the stock, &c. as between in-coming and out-going tenants, at a fair value; and at the end of his term would again relinquish on the same conditions.

All lawful compacts between man and man may be made certain, and to last for the time agreed on, provided the contracting parties are competent. On this principle a farmer bestows his property and time in the cultivation of the estate of his landlord, who, for certain considerations, has, by a valid agreement, delegated all his powers to his tenant, excepting
those

those expressly mentioned and accepted in the agreement. Thus far the bargain is sure, and the tenant runs all risks of loss of crops, stock, &c. but if the land be not tithe free, or subject to a modus only, a third person has an interest in the produce thereof, and if that third person be an ecclesiastical rector, he is not competent to make a certain agreement for his interest, were he so disposed. The tenant has the additional risk of the rector's avarice to encounter, and improves accordingly.

When an unreasonable composition, or tithes in kind are taken, the tenant converts to pasture the lands which produced them, if he finds it his interest so to do; and the best system that can be devised, for the good of the publick, thereby receives a mortal stab; for clover, hay, potatoes, turnips, cinquefoil, tares, the whole class of pulse, and intervening meliorating crops, whether for the purpose of feeding the tenant's cattle, or otherwise, are subject to tithes in kind, when severed from the soil on which they grow.

If the rector, or his tithe-renter or gatherer, be of a litigious and troublesome disposition, which the tithe laws, as they now stand, put it too much in their power to indulge, the evil of tithes in kind is increased to an alarming magnitude. In rainy and uncertain harvest weather, when prudence dictates the housing or stacking the crops immediately from the scythe or sickle, to avoid the consequences of the season,

season, they must be shocked or cocked before the farmer can give the rector, or his petty tyrant of the parish, notice to set out the tithe; he must wait a reasonable time for his arrival on the spot, before he will venture to decimate *ex parte*; in the mean time a sudden and heavy rain outstrips the slow-paced tithing man, and both crop and tithe are much injured or totally ruined thereby. If the tithingman does not arrive at the usual time allotted to him, the farmer leaves the tenth shock or cock, and carries the rest of the crop at the risk of a law-suit. How frequently in such seasons do the tithes, rotting on the ground, meet the eye of the traveller, in every part of England!

It is a most equitable rule, that what concerns all should be approved of by all; the rule of tithing is approved of by nobody; and the respectable body of the clergy, particularly those who reside on their livings, are most exposed to its baleful effects; they are aware of the evil, and lament their want of powers to apply an adequate remedy; they are not competent to make certain agreements for a term of years. The tenth of crops produced by land, cultivated as it may be, and should be, cuts too deep into the farmer's profits, and the clerical rectors have not yet been enabled to adopt any equitable mode by which their rights can be ascertained; and therefore recur to tithes in kind. If a crop of garden-
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pease or beans are gathered when green, and sold, both the rector, if inappropriate, and vicar, claim tithes of one and the same crop, and threaten to recur to law for the recovery thereof. If the farmer gives tithes to the rector instead of the vicar, or *vice versa*,

“ *Incidet in Scyllam cupiens vitare Charybdim;*”

and this is actually the case in the parish of Sunbury in Middlesex, where tithes of green-pease have been, time out of mind, given to the rector inappropriate, and now, for the first time, claimed by the vicar.

The consequences of tithes in kind taken by the clergy are, continual disputes and bickerings between them and their parishioners; the farmers grumble, slacken in their improvements, give their spiritual guide all the trouble in their power while collecting his tithes, and cheat him if they can; he recurs to law, and soon becomes the most unpopular man in his parish, and the church is deserted. The philosophy of religion is spurned with the professor. These are notorious, melancholy truths; and whoever attempts to refute them, must be driven to the pitiful necessity of reasoning in the face of a fact.

I highly respect the learning and virtues of the clergy; it is a primary wish of my heart to break asunder the gothic chains with which they are bound, and I call upon all honest men to assist me. The reformation is a precedent in point; I cannot have
a better;

a better; celibacy was thereby abolished, and the clergy in part restored to their natural rights; they were permitted to marry and become the fathers of perhaps a numerous offspring. Had the clergy been also permitted to farm lands, a privilege which their local situations peculiarly entitle them to, and not been confined to the narrow limits of their glebes, they would thereby have been enabled to employ and provide for their children. Agriculture, in the hands of men of learning and abilities, would long ere now have been reduced to a science; and the farmers of this class would have known and avoided the consequences of throwing impediments in the way of others engaged in the same pursuits.

Necessity, combined with the wretched stipends in many parts of Wales, compels some of the clergy there to turn farmers in defiance of law, and bring their small capitals into action, before they are expended in a maintenance which their clerical profession does not afford. I have seen, and can give ample and honourable testimony of, the publick good resulting from the examples given by these truly apostolick teachers, in a country where practical examples of good husbandry are much wanted. I traversed the county of Herts in quest of able farmers, to present them to this honourable Board, and fame led me by the hand to the rector of Hatfield. The birth, talents, and connections of that gentleman
give

give him a commanding prospect of his duty; his glebe contains one hundred acres, and enables him to farm with effect, and within the letter of the law; his rectory, in point of revenue, is a little bishoprick; and his farm, in point of neatness and fertility, a little paradise, by his judicious improvements. What a happiness it is for the husbandry of this extensive parish, that their rector is a good farmer! Many rational and valuable improvements might have been expected from many other clergymen, had not the door to agricultural practice been shut against some of the ablest men in the kingdom. The investigation of the soil leads to the remedy: empower the clergy by law, to farm lands, and grant leases of their tithes for twenty-one years certain, if they think proper so to do. If they neglect the duties annexed to their sacred functions, by their attention to agriculture, or any less worthy pursuit, punish them; but let not the measure of their punishment extend to a total deprivation of one of the most rational amusements the human mind is capable of enjoying; for be it remembered, this primary art in the catalogue of peace and plenty is cultivated by the first estate of the realm.

That the interests of the church may not suffer by collusion, let the power be vested in the patron and bishop of the diocese to appoint competent persons, to settle and approve the rent to be given, and to witness

witness the same, by being parties to the lease or leases: the clergy to have preferable powers of distress in cases of non-payment of rent, if the landowners do not, for their own and their tenants benefit, become the lessees. The consequence would be, the clergy, or a great majority of them, would cheerfully acquiesce, though left to their option, and when emancipated from at least a questionable restriction, if they do not avail themselves of the privilege of farming, they would have a more natural attachment to those who did. The tenant could then make a sure bargain at the outset with his landlord and rector, and give really more rent for the tithes than they could then be worth, the trouble and expence of collecting considered: and thus exempted from all uncertain demands, and assured of an adequate compensation at the end of his term, he would put and keep his farm in a proper state of cultivation, and the lands remain in an improved state, instead of being beggared by cross-cropping and weeds, in the last three years of the lease, and again requiring fallows, attended with the loss of crops to clean them, at an expence much greater than the amount of the profits resulting from the now latter conduct of tenants. By these means, farming will become more respectable, and of course more studied; and lands will be kept in a proper state of increasing manurage; and by these means, and by these means only, the exertions

exertions of this Honourable Board will be crowned with success.

SURVEY OF STAFFORDSHIRE, p. 97.

The question of *tithes* having been pretty much and pretty often agitated and examined, I cannot expect to be able in this report to throw any new light on the subject; I shall, however, state my ideas of the effect they have on agriculture; and if that effect shall appear prejudicial, some mode of preventing or remedying the evil may be proposed, without doing injury to any of the parties interested.

Tithes having been formerly appropriated for a particular purpose, must be admitted as a property equally sacred with any other, especially as that appropriation is admitted by those laws which regulate the country where the tithes are produced; and although a considerable part of the property so appropriated has since been alienated from its original purpose, yet such alienation having been admitted and confirmed by those laws which protect all other property, no friend to justice and the stability of property can expect an exoneration from, or an abolition of tithes, without proposing and providing an equivalent.

Having said this, I must at the same time confess, that tithes, being an heavy tax upon the efforts and exertions

exertions of human industry, are in a considerable degree a prohibition of such exertion, and in that respect act as a dead weight and a check on that spirit of improvement, which it is good policy to encourage by every means that can be devised. If an equivalent can be found, and a commutation be effected, without injury to any one concerned, such regulation would doubtless be an improvement in our political system.

The following plan is proposed as the outline of an exchange of tithes for land, as land will always bear a value proportioned to that of its produce, and even the price or value of labour is measured by the same standard.

Let an act of parliament appoint in every diocese an equal number of the most respectable clergy and country gentlemen, commissioners and trustees, and with a power of nominating surveyors to value all the tithes belonging either to the clergy or the laity within the diocese; and let the act give an option to the land-owners of purchasing their respective tithes at the valuation fixed on them by such surveyors; the money arising from such redemption might be invested in the funds, or other securities, until a proper opportunity should offer of laying it out in land; and where the land-owners should refuse to purchase such tithes, the commissioners might have a power of mortgaging them, or of taking up money
on

on their security, to be invested in the same way with that arising from tithes actually sold: or, after a given time, the trustees might be empowered to set apart an allotment of the land of those owners who refuse to purchase, and which, if conveniently situated for the former or title-owner, might be so applied; otherwise sold, and the money arising from such sale invested as before, until it could be laid out in the purchase of land.

The execution of some such plan would be attended with infinitely less trouble and expence than that now incurred by the annual valuation of tithes, as, should the proposed regulation be once effected, the business would be settled for ever; but under the present system, the surveyor or valuer's business is continued from year to year, and if that system should continue, will be from generation to generation. An equivalent in land must certainly be a more solid property than tithes. Land may be improved in any degree by good management and industry; tithes fluctuate or sink in value at the will of the cultivator.

I think some such commutation as this might be easily effected, and then all parties would be pleased with the alteration.

SURVEY OF WORCESTERSHIRE, p. 43.

If the payment of tithes in kind, and mortmain tenures, are found obstacles to improvement, might
not

not such obstacles be removed, by a law, enforcing a composition for tithes to be assessed, not by the value of any particular estate, but by the average value of a considerable district, and re-assessed at different periods; confining the assessment to the value of the land in a common course of husbandry; that is, excluding all extraordinary improvements, such as buildings, plantations, &c. and by regulating renewals of the tenures under the church, in the same manner as the proportion of rent claimed as a fine, being ascertained by the value fixed for the tithes of the district.

SURVEY OF MONMOUTHSHIRE, p. 26.

Tithes are very unequally paid in this county, and the present mode of collecting them in kind, throughout many parishes, disturbs the harmony of society, and checks agricultural improvements. A respectable gentleman of landed property, who told me he had a turn for that pleasing employment and healthy amusement of farming, and had been holding some part of his estate in his own hands, gave it up and let it all, because he would not be subject to have a dispute with the clergyman of the parish taking the tithe in kind, upon his not agreeing to pay the advance made, in paying per acre so much more than
formerly.

formerly. I must observe, at the same time, that upon the large estates of a noble duke in this county, I heard no complaint made in the mode of the payment for the great tithes; instead of taking them in kind, there was a commutation settled in a moderate way, so as to give content. In the northern part of the county, 2s. 6d. per acre is, I find, only paid for the tithe of wheat in some places; while in the southern district, I have been informed, the tithe has been raised for the same article, from 6s. to 12s. per acre.

This subject has been so copiously treated, and so successfully too, I have no doubt, by others, that nothing new remains to be said upon it. If the wisdom of parliament perceive it necessary to consider it, the clergy and laity must benefit by the regulations of this very important object; and my most earnest wishes are, that it may be attended with the desired success.

SURVEY OF CAERNARVONSHIRE, p. 10.

In some places of this county hay is tithed, in other places it is not. Corn is always tithed, which is considered a great bar to agricultural improvements.

SURVEY OF DENBIGHSHIRE, p. 23.

It is a fact that must strike every one who has made the tour of Britain, especially if he is acquainted with its former as well as present state, that though the exertions of England in the *mercantile* and manufacturing lines of business, have for the last half century been vigorous almost beyond compare, yet in the line of *agriculture* it has been comparatively languid: Whereas in Scotland, though she started late, and has made but small progress in industry, yet the exertions in agriculture have nearly kept pace with those in the other departments.

This can be ascribed to no other circumstances than those mentioned in the text: among these the drawing of tithes in kind is peculiarly discouraging to agriculture, as it not only affects the tenant, but even the proprietor himself, who must, on this account, forego many attempts he could have made in improvements, with profit. The proprietors of land in the neighbourhood of Aberdeen, who justly consider the expence of improving the soil as a purchase price, would in all cases find that though they may have a reasonable profit, where no tithe is drawn, they could have had none at all if that had been paid in kind. Indeed, in most cases, that tithe alone is more than the whole profit they ever expect to derive from it. The consequence here is obvious;

but

but the retardment which this circumstance will make, when operating in millions of cases over a whole kingdom, baffles all attempt at calculation.

To avoid this dreaded evil, extensive tracts of land are left in England in perpetual grass, when it is by no means in a condition for yielding the most abundant produce in that state. The quantity of bread-corn is thus necessarily diminished, and with it the total amount of food even, for beasts is curtailed. Nothing can be so ruinous to agriculture!

SURVEY OF NORTHAMPTONSHIRE, p. 61.

The collecting the tithes in kind is very generally complained of, and in parishes where that mode is adopted, it certainly operates very powerfully against the introduction of improvements in husbandry; while at the same time it is attended with very disagreeable consequences, both in a religious and political view, as it is often the means of creating such divisions between the clergyman and his parishioners, as render the religious instructions of the former of little avail, while it loosens that chain of intercourse and connection, which it is considered of so much importance to keep united. It has happened (though, to the credit of the clergy of this district be it said, the instances are very rare) where the tithes have
been

been let to a laymán, for the purpose of oppression, he has been known to exert that authority, with which he was invested, and hath not only taken the tenth shock of corn, and the tenth cock of hay, but also the tenth lamb, pig, hen, egg, &c.; nay, has even gone into the garden, and taken not only the tenth part of the fruit, but also the tenth of the produce of the kitchen-garden. Under such circumstances as these, it may be asked, who is the farmer, who would not feel himself aggrieved?

Many plans have been suggested in order to bring about an arrangement of tithes, and to place them on some permanent footing. It has been proposed that the proprietors should farm the tithes in each parish, or that a corn-rent should be fixed by the average price of grain for a number of years past; but that which appears most likely to give general approbation, and which seems best calculated to do justice to all parties, is to give the clergyman a compensation for his tithes in land, because the depreciation in the value of money has been so great, as to render any arrangement which is to be founded on it as a medium by which the value is to be ascertained in future times, very uncertain; whereas the produce of land must always bear reference to the value of money at the time.

Whether the open field parishes are to be inclosed, or allowed to remain in their present state, still it is
humbly

humbly supposed, that a general arrangement might be made respecting tithes, by giving a compensation in land; and that upon the same principles on which those who act as commissioners under inclosing bills determine these matters, which is generally by finding the clergyman entitled to one-fifth, or one-sixth of the tillage land, and one-ninth of the pasture, or two-thirteenths of the whole parish.

Were this desirable object by any means obtained, improvements in agriculture, and the different breeds of stock, would no doubt take place; and instead of the clergyman and his parishioners living in a state of contention or warfare, we should see them living as one great family, in harmony and peace, and the clergyman considered as the parent and preserver of that bond by which they are united.



ART. XIII.

On the most practicable Mode of giving an Equitable Compensation for Tithes.

[By Thomas Davis, esq; in a Letter to the Secretary.]

SIR,

THE Society having thought proper to call the attention of their members and of the publick, to the subject of Tithes, under a well-founded conviction that the payment thereof in kind not only tends to sow dissention between the clergy and their parishioners, but is also a very great hinderance to improvements in agriculture, and having offered a premium for the best essay on the most practical mode of giving an equitable compensation for tithes in general;

The writer hereof begs leave to state to the society, that having had a long and active experience in settling commutations for tithes under inclosure acts of parliament, and having had an opportunity of observing the inconveniencies and defects in the modes hitherto authorized and directed by parliament, he flatters himself that he can point out such an alteration in those modes, as will lay a groundwork for a general commutation; and which, if

* The publication of this Essay (to which the Society's prize was adjudged) was omitted in the 7th volume, at the request of the author.

sanctioned by this Society, may possibly hereafter attract the attention of parliament; and if tried and found to answer in single parishes, may hereafter pave the way for a general commutation act.

THE evils arising from the exaction of tithes. in kind are too well known to require any additional proof.

They not only furnish frequent occasions of disputes between the receiver and payer, but in many instances they operate as a tax upon industry, particularly in countries where the land requires expensive improvements. In both these cases, they have an undoubted tendency to injure agriculture, and therefore, however just the *tax* may be in itself, the policy of it, in the present state of agriculture, is certainly questionable.

In the dark ages of the world, when its inhabitants depended solely on the labour of their hands for *the bread they ate*, the obligation of a payment of *part of that bread* to a class of men set apart from the secular concerns of the world, and devoted to the religious and moral instruction of their fellow-creatures, was an institution worthy of its divine author; and the progressive improvements in civilization and science, which those ages are universally allowed to have received from the clergy, are a striking proof of the wisdom of that institution.

In

In those days, when *money* was scarcely known as a circulating medium, and not only the *rent* of the land itself was paid with part of its produce, but the little trade then known was merely a *barter* of one commodity for another, a payment to the clergy in *money* would have been as justly reprobated as the payment of tithes *in kind* is at this time.

It is the difference in the *manners and customs of the times*, that has altered our ideas of the nature of this provision for the clergy, so as to render that payment a grievance, which our forefathers paid without grudging, and which indeed they *could have paid in no other way*.

Another reason for the dissatisfaction which for the last two centuries has attended this payment, is the alienation of a very great part of the tithes of the kingdom, made by King Henry the Eighth at the dissolution of the religious houses, whereby they were taken from the church and vested in lay-owners; *this alteration striking entirely at the meritorious part of the payment*, and making that *a tax upon the land*, which in its first institution was *a personal payment* by one set of men to another, in the nature of a *salary* for services performed by the latter to the former.

But, however detrimental tithes may be to agriculture *at this time*, or however their *original nature* may be altered, it cannot be denied that agriculture

has grown up, *in spite of them*, to the perfection to which it has now attained. Nay, indeed they may be said to *have contributed in some degree to bring it to that perfection*, by putting landholders upon expedients to raise such crops as were the least advantageous to the tithe-owners and the most beneficial to themselves, and which have tended ultimately so much to the advantage of the kingdom, viz. the laying down *wet arable lands to pasture*, and the raising *artificial grasses, turnips, and other green crops upon arable land*, instead of exhausting the land, as formerly, with repeated crops of *corn*." A system which has enabled the kingdom to supply its increased consumption of animal food, for which it must always depend upon its *own* resources, almost unassisted by importation.

And this alteration in the agriculture of the kingdom has made the *value* of tithes so very uncertain and fluctuating, that, although in *particular districts* it has been very *much increased* by the bringing large tracts of uncultivated land into tillage, it *has decreased in other districts*, particularly in the neighbourhood of great towns, in proportion as the value of the land has increased by the introduction of good husbandry.

And perhaps this uncertainty of the tithes, arising from the openings which this choice of crops leaves for subterfuges and evasions, and consequently of
disputes,

disputes, has tended to make tithes in general more obnoxious *at this time*, although they are in so many instances compounded for at a fair price, than they were in *ancient times*, when lands were regularly sown with corn in a common field state, and the tithe corn rigorously taken up in kind.

And as a proof that this argument is right, it is well known, that there are always more disputes about the tithes of small insignificant articles, than about the tithes of corn, which are in fact the real grievance.

If these arguments are well founded, as the writer hereof thinks they are, it is obvious that, in the present state of agriculture, a commutation of tithes for a *fair equivalent* would be a very desirable thing, not only to the occupiers of titheable land, but in many instances to the tithe-owners themselves. The difficulty is to find out that equivalent.

In treating on this subject, it is to be lamented that the minds of men have been, (particularly of late years) so prejudiced *against the very nature of tithes*, that the idea of a *fair equivalent* has seldom been thought of. They have been too frequently looked upon as a kind of *surreptitious property*, of which the owners might at any time be dispossessed at the will of the state. This kind of argument, instead of obtaining the end proposed, must undoubtedly defeat it.

There are many descriptions of property in this kingdom much less capable of bearing a scrutiny into the means of its acquisition, than that of tithes.

But when that property has been guaranteed to its possessors by the constitution and laws of the kingdom, it is idle to dispute the legality of the mode by which it was acquired.

Not only that very great proportion of the tithes of this kingdom which is in lay hands, has been *sold* and *bought* for a valuable consideration, and many of the livings which still remain to the church have been as legally sold and bought under the protection of the law, as any other description of property whatever; but the lands subject to those tithes have also been bought at reduced prices on account of that incumbrance, in the same manner as estates have been bought subject to fee-farm rents, and houses to ground-rents. And although all those payments are incumbrances on the property of *one set of men*, yet they constitute the *property*, and frequently the *only* property of *another set of men*; and the laws of England (*whose first care is the preservation of property, however it may vary in description*) are equally bound to protect both.

If this fundamental rule were strictly kept in view, that the land-owners and tithe-owners are *equally* entitled to their respective shares out of the produce of the land, there would be fewer disputes than there

now

now are about tithes in their présent state, and men would turn their thoughts more unbiaſſed to find out an equivalent commutation to be offered for them ; a commutation ſo contrived, as to ſecure to both land-holders and tithe-owners, as near as poſſible for time to come, the *ſame proportions* they would have received out of the land, in caſe no alteration had been made in *the mode of aſcertaining thoſe proportions*.

But, however deſirable, or however practicable, it might be to find an equivalent commutation to be given in lieu of tithes, it does not follow that any ſcheme of this kind can take place *at one time* throughout the kingdom. That is neither neceſſary nor practicable.

It is well known that commutations are directed in every ſeſſion of parliament, by virtue of incloſure acts, in pariſhes where there are *commonable lands*, and afterwards ſettled by commiſſioners without any difficulty; and therefore others might be made in pariſhes *already incloſed*, on the *ſame plan*, or a *better*, if a better could be found. The principal reaſon why theſe commutations have in general been made at *the time of an incloſure of commonable lands*, is, the opportunity of doing it without the expence of a *ſeparate* act of parliament; and the *fear* of that expence is the reaſon why it has been ſo ſeldom done in old incloſed pariſhes.

There

There seems to be no good reason (provided a *fair and equitable ratio* of commutation could be pointed out which would extend generally to *all* descriptions of tithes in the kingdom, and if a power were lodged *somewhere* to carry those commutations into effect without the great expence of separate acts of parliament) why many parishes might not soon be exonerated from this incumbrance.

It has been before observed, that it is not necessary that commutations of *all* the tithes in the kingdom should be made at once; nor would it indeed be practicable. If the great desideratum of a *general ratio*, that would be in *all* cases an equitable bargain between the tithe-receiver and the tithe-payer, could be settled; and a power could be constituted to carry such bargains into execution; commutations of this kind would be made *as fast as they were wanted*, viz. *whenever tithes be came a matter of contention*.

There are two kinds of compensation that can be given for tithes, viz.

1st. An equivalent in the gross; and

2^{dly}. A yearly commutation.

An equivalent in the gross may be given in two ways, viz.

1st. By obliging the tithe-owners to *sell* their interest to the landholders for a valuable consideration in money; or,

2^{dly}.

2dly. By obliging the latter to give *land* to the former of equal value with the value of their tithes.

The former has always been thought, and perhaps properly, too great a stretch of power even for parliament to attempt.

The latter is frequently done under inclosure acts in parishes where every proprietor has sufficient *commonable lands* to give for the exoneration of the tithes of all his property in that parish; but is frequently and indeed generally impracticable in parishes where the lands are already inclosed.

A yearly commutation in money may also be given in two ways; viz.

1st. By a *permanent* yearly money payment.

2dly. By a payment in money, to be *varied* from time to time, according to the variation of the *value of the articles out of which the tithes arise*.

The former has been sometimes directed in inclosure acts, but is objectionable, on account of the continual fluctuation in the *value of money*.

The latter is the mode most commonly directed by parliament in inclosure acts at this time for settling commutations for tithes; and the variation of this yearly payment is in general directed to be regulated by the variation in the prices of *wheat* given in the London Gazette,

The latter mode may therefore be said, not only to be the least exceptionable, but is, indeed, perhaps
the

the only practicable mode by which parishes, already inclosed, can be exonerated from tithes.

But, whether the price of *wheat* alone be a proper ratio by which to fix the value of *all* tithes, is a matter deserving serious consideration.

The writer of this, who has been long and actively employed under inclosure acts, is of opinion that it is not; and, with all proper deference to the wisdom of the legislature, who have hitherto directed that ratio to be adopted, ventures to state the following reasons for his opinion:—

The tithes of this kingdom arise chiefly from the following articles, viz.

Corn, viz. wheat, barley, oats, pulse, &c.

Hay, including clover, vetches, &c.

Cows, viz. calves and milk.

Sheep, viz. wool and lambs.

Underwood.

Pigs.

Poultry, &c.

It is not only evident that the price of *wheat* does not govern the price of *all* the other titheable articles above enumerated, but it is as evident, that the price of wheat fluctuates *less* than *any other necessary of life*, if taken on an average for any twenty years together; it having been the policy of the government of this country to keep the price of so indispensable an article *as steady* as possible, by *im-*
porting

porting it from all other countries when it is *dear* in this, and by giving a *bounty* on its exportation when its price at home is too *low* to pay the expence of growing it.

And the effect of this policy has been such, that the price of wheat has been very little higher on an average of the last twenty years, than it was on an average of the twenty last years of the last century; while the price of barley and oats, cheese and butter, have nearly doubled.

Any ratio for the tithes of the last-mentioned articles, which was settled in the last century, and deduced from the price of wheat alone, must therefore *at this time* be an unfair commutation for the tithes of many other titheable articles. And there is no fair ground on which to argue, that the value of the last-mentioned articles, and indeed of all other productions of land, for which this kingdom must chiefly depend on its own resources, may not *hereafter* fluctuate as much as it has hitherto done; while it is more than probable, that, by means of importation, *wheat* may keep nearly its *present* average price.

No commutation for tithes can be called a fair equivalent, which is not so settled as to fluctuate with the rise and fall of *every* commodity subject to tithes; so as to be in fact, a fair yearly rent for *each year's* tithes, or as nearly so as the nature of the case will admit.

The

The ratio of a commutation should therefore be deduced from *all* the several articles out of which tithes arise, or at least from *such of them* as are of the greatest consequence, and which, in a great degree, influence the price of the rest; and some standard, as simple in its operation as possible, should be fixed upon, by which the owners of tithes may make such a commutation as will ensure them and their successors, *from year to year for ever*, the same income as would have been received from the *tithes themselves*, in case such commutation had not taken place; or as nearly so as the nature of the case will admit.

The principal titheable produce of arable land, being, as is already stated, wheat, barley, and oats; the commutation for the tithes of arable land should be regulated by the value of *all those sorts* of grain; and those values could be as easily deduced from the London Gazette, as the value of wheat alone.

Thus would the tithe-owner be paid the *real value* in money for the several titheable articles, which he would otherwise have taken in kind. And, as the price of the *other* common productions of arable land is, in a very great degree, influenced by the prices of these principal kinds of grain; it is fair to infer, that a ratio for the other productions of arable land, deduced from these prices, would be a fair equivalent for the tithes of those productions; and particularly so, when taken on an average of some
years

years together. And the possible effect which future regulations may have with respect to the importation and exportation of corn, which it is impossible at this time to foresee, is an additional reason why no conclusion can be drawn, that the *different kinds* of grain will hereafter bear the *same relative prices* as they now do; and consequently, that *no ratio* deduced from the price of *one* kind of grain, can be infallible with respect to the other kinds.

So far, there appears to be no great difficulty in finding a proper standard with respect to the common productions of arable land; and with respect to the more valuable articles, such as hops, hemp, flax, &c. of which the production is local, it would not be difficult to ascertain their value, and fix a local ratio by which to regulate the tithes thereof. And perhaps it may not be difficult to prove, that even those articles which are local, are affected by the prices of the more indispensable articles of consumption, viz. corn, and if so, a ratio taken from the prices of the latter, would hold good with respect to the former. But these articles are not of general consequence enough to enlarge upon here.

From a due consideration of the foregoing observations, it is evident that no great difficulty will occur in finding proper standards for ascertaining the value of the tithes of *arable land*.

But

Even *hay*, an article of constant consumption, cannot, on account of its being so very variable in *its quality*, be reduced to any standard price. But even that article is regulated by the price of *butter*. For, as the same land which produces hay for sale (especially near great towns, where the demand *both for hay and butter* chiefly is) would also keep dairy cows, the quantity of land mown for hay will always be regulated by the price of the produce of such cows.

And by parity of reasoning, it may be said with truth, that the price of *lambs* and *wool* is as much regulated by the price of *butter*, as the price of hay is; for almost *all grass land* may be fed with cows. And butter being, as is before explained, the article of *daily consumption and daily return*, and therefore governing the price of *cheese*, and other productions of grass land, whose sale and whose return is *more distant*, it follows, that every occupier of grass land will apply it to that purpose which he finds to answer best. And that kind of exertion will always operate so as to keep the profit (and of course the tithe) of *all* the various articles produced *on the same kind of land*, nearly on a level.

And even *underwood* (from which, in some countries, a considerable tithe arises) will be grubbed up, and made pasture land, the moment it is found that *the same land* would pay *better*, if fed by *sheep* or *cows*. If

If therefore *butter* be, as I consider it to be, the only single commodity, by which the tithes of all the productions of grass lands can be regulated, in settling a commutation for the tithes of such lands; I propose, that the clerk of every market in Great-Britain should be directed to make a weekly return of the price of *milk-butter* in such market, in the same manner as the returns of the prices of corn are made. And that in every commutation for tithes, the commissioners be directed to enquire, first, the several proportions of tithes arising in each parish, from *wheat, barley, and oats*, and other productions of arable land; and also the proportion arising from the *different productions of grass land*; and then should state what were the returns in the London Gazette, on the average of the year preceding, of the prices of *wheat, barley, and oats*, and also of the price of *milk-butter*, in that county.

That the justices of the peace for each county should, yearly, at their Epiphany sessions, publish an account of the average prices of *wheat, barley, and oats*, and also of *milk-butter*, taken from the London Gazette for the year preceding, for that county. And that the difference in the prices between the year then last past, and the year in which the commutation was made, should be the ratio by which the tithes to be received from every landholder should be regulated for the year, ending at the ensuing Easter; in like manner

manner as commutations are now settled and regulated daily under inclosure acts, *by a ratio deduced from the price of wheat alone.*

It may be said that the price of the tithes, when once settled, might remain the same for *more than one year.*—I answer, that as the many parishes which now pay rents of this kind in lieu of tithes, and the many others yet remaining to be settled, must necessarily begin from different periods; it follows, that the justices *must* make a return *every year.* But the tithe-owners and the tithe-renters, are *not obliged* to alter the terms every year; but may, if they think proper, make agreements for *three, seven, or fourteen years,* or for as long time as their respective interests shall continue.

With respect to the tithes of such valuable articles as hops, hemp, flax, &c. the legislature might fix a fair price per acre for each, and such as would not be sufficient to prevent the cultivation of those articles in land naturally adapted to them; at the same time recollecting, that, as they are produced in general in the very best land, the price to be fixed for the tithes should bear a proportion to the superior value of the land, and to the tithes it would produce if the cultivation of those articles were superseded by the cultivation of corn.

And whenever a general commutation takes place, the rise and fall thereof might follow the average price

price of *corn*; as it is by the price of *corn* that the growth of those articles is at present in a great degree regulated.

Mr. PRYCE having, in his very ingenious essay on this subject (already published by the society) pointed out minutely the process which he apprehends would be proper to be authorized, by parliament to carry commutations into general effect, and parliament having in many instances done him and the society the honour of adopting many parts of his plan in commutations under inclosure acts, it will be needless to add more here on that subject. The mode now in general use may be seen in many inclosure acts passed every session, and particularly in an act sent herewith, passed in the last session, for inclosing the open lands, and commuting the tithes of the parish of "Milton-Bryant in the county of Bedford."

If the society should honour this plan with their sanction, and parliament should adopt it by way of experiment in particular parishes, the difficulties of making an act for carrying it *into general execution* will be seen, and, it is presumed, will easily be obviated.

Such an act might lodge a power in some of the law courts, the court of quarter-sessions, or perhaps the new Board of Agriculture, to grant commissions for that purpose, on the application of a specified majority of the parties interested in the tithes of each parish.

It is not necessary, nor perhaps possible, that the tithes of the whole kingdom should be commuted in one year, two, or three. It would be sufficient, that whenever the parties concerned felt the grievance, they should know where to apply for the remedy.

With best wishes for the prosperity of a Society who have so much the publick good at heart,

I remain, their faithful member,

THOMAS DAVIS.

Longleat, Sept. 1793.



ART. XIV.

An Historical Account of the Marsh-Lands of the County of Somerset.

[By RICHARD LOCKE, esq.]

In a Letter to the SECRETARY.

MY GOOD FRIEND,

Highbbridge-House.

IN obedience to your wishes I here send you an historical account of the *Pasture-Land*, situate in the flat part of Somersetshire. It is chiefly stated from my own observations, in busy life, during a series of little more than fifty years.

If we go so far back as *Domesday-Book*, we shall find that the annual average value of marsh-land was at that æra estimated at one farthing per acre, allowing the same quantity of acres to have then existed as are at present charged upon our parish books. For the first four hundred years after this period, lands doubled their value every century; and from the Reformation to the present time the value of land has been doubled every fifty years. This enormous increase of landed property, within the interval of 700 years, may be estimated as two thousand is to unity, supposing we reckon a little more than 40s. per acre for the present annual average value.

As I drew my first breath in Burnham, and have always resided in it, my calculations shall be supported
from

from the history of that parish, together with a few adjoining parishes of the South-Marsh. But, in order that you may understand me better, I refer you to the following table.

Parishes	No. of Acres	Value of the Parishes in 1796.	Value of ditto in Domesday-Book.
Wedmore	10,000	20,000 <i>l.</i>	<i>King's Manor.</i>
Huntspill	6,000	15,000 <i>l.</i>	7 <i>l.</i>
Burnham	4,000	10,000 <i>l.</i>	4 <i>l.</i>
Mark	4,000	9,000 <i>l.</i>	<i>part of Wedmore.</i>
East-Brent	3,400	7,000	} <i>included with Berrow and Lympsham.</i>
South-Brent	3,650	7,500	
	<hr/> 31,050	<hr/> 68,500 <i>l.</i>	

Annual Value per acre at different periods from the Conquest to the present time.

In 1086 <i>one farthing</i>	1600	—	1 <i>s.</i> 3 <i>d.</i>
1191 <i>one halfpenny</i>	1650	(<i>Interregnum</i>)	2 <i>s.</i> 6 <i>d.</i>
1292 <i>one penny</i>	1688,	(<i>Revolution</i>)	5 <i>s.</i>
1399 <i>two-pence</i>	1745,	(<i>Scots Rebellion</i>)	10 <i>s.</i>
1500 <i>four-pence</i>	1796,	—	2 <i>l.</i> 5 <i>s.</i>
1550 <i>7½<i>d.</i></i>			

Banwell, North-Petherton, Stoke-Courcy, Cannington, and some other parishes in the neighbourhood, make a more respectable figure in the Norman survey than the above, and are esteemed to be of equal value at present; but as they contain some high-land, and more than a proportionable quantity of arable, I have not included them in the above table.

Twenty

Twenty years after King WILLIAM the first had completed his conquest of England, in 1066, he caused a survey to be made after the manner of that made in the time of EDWARD the Confessor. The lands were valued by carucates and hides: the former related to the arable, and contained the quantum tilled with one plough; and the latter included a sufficient quantity of meadow, pasture, and wood with it, for the use of the cattle and inhabitants, under the denomination of Norman Great-Lords and Saxon Thanes, including their vassals, distinguished as servants, villanes, borderers, coliberts, and cottagers.

As the lands I am speaking of were in 1086 valued at about one farthing per acre per annum, upon an average, so we find in the tax laid on by HENRY the first, by way of raising a portion for his daughter MAUD, on her marriage with the Emperor, that the value of land increased; and when the ransom-tax of RICHARD the first was paid by knights fees, it continued to increase, insomuch, that at his death, in 1199, it became doubled, being then estimated at one halfpenny per acre. In the Pope's tax laid on in 1292, it appears, that within that last century the lands again became doubled, for the average estimate at this æra seems to have increased to one penny per acre. Upon the death of RICHARD II. and the accession of HENRY IVth. in 1399, the lands became worth two-pence per acre, as they be abundantly

dantly proved from the various rent-rolls of the lands belonging to the abbey of Glastonbury. After the overthrow of RICHARD III^d, in the battle of Bosworth, the houses of York and Lancaster became united in the person of HENRY VIIth; and, calculating from the many and various taxes which he laid on the land, it appears, that long before his death, viz. about 1500, the value of estates had in this last century also become doubled, being increased to four-pence per acre.

It was, however, on account of the reformation in the reign of HENRY VIIIth, and a total suppression of the feudal tenure, that the lands became doubled in half a century; for as the church-lands were divided and subdivided amongst the laity, so these began to inclose and identify their property, insomuch that in the leases granted in the reign of EDWARD VIth, we find the reserved rents amounted to seven-pence halfpenny per acre, exclusive of about that sum for a *farlief*, which was then considered as a fine for the addition of a life or *for a life*. If we consult the feoffments and leases granted in the reign of Queen ELIZABETH, we may observe the gradual increase of landed property to such a degree, that it again became doubled in fifty years, for at her death, in 1603, the reserved rents amounted to one shilling and three-pence per acre. The peaceable reign of JAMES I. was favourable to landed property,

property, which, however, received a check in the troublesome reign of CHARLES Ist; but notwithstanding this, it again became doubled in fifty years; for it appears from the survey taken by CROMWELL's commissioners, that the marsh-lands I am speaking of were valued in 2s. 6d. per acre. Soon after King WILLIAM's accession to the throne, viz. in 1688, the land-tax was laid on as it stands at present, which is about five shillings per acre on an average. In the subsequent fifty years, estates again became doubled; for I remember well in the Scotch rebellion, in 1745, that the common price of pasture-land was ten shillings per acre. From this period agriculture became known and practised, infomuch that every seven years lease, from that time to the present, increased the annual rent five shillings per acre; so that the present annual value of these estates may be estimated at 45s. per statute acre upon an average.

As to pasture-land, we may observe, that about one-tenth of it was in its highest degree of culture fifty years since; and the only difference in agriculture which I have remarked on those lands is in the mode of draining, for when I first remember the gutters were dug two feet wide, and one foot deep; whereas the present improved practice is to cut the drain ten inches wide and twenty inches deep.

In recurring to my minutes when I first began to measure and value land, in 1755, I find the following

ing table, No. 1, calculated for the valuation of pasture, which will discover the great advance of estates in the course of forty years, by comparing it with the present valuation as in table No. 2.

No. I.			No. II.		
Valuation table in 1755.			Valuation table in 1796,		
Quality of the land.	Price per acre.		Quality of the land.	Price per acre.	
	£.	s. d.		£.	s. d.
No. 1	1	5 0	No. 1	3	10 0
2	1	2 6	2	3	5 0
3	1	0 0	3	3	0 0
4	0	17 6	4	2	15 0
5	0	15 0	5	2	10 0
6	0	12 6	6	2	5 0
7	0	10 0	7	2	0 0
8	0	5 0	8	1	15 0
9	0	2 6	9	1	10 0

These tables will give a better answer to the Lady who consulted Lord MANSFIELD, than his Lordship gave her with regard to the disposing of her cash to the best advantage. “If, says he, your Ladyship
“wants principal without interest, buy land;—if in-
“terest without principal, lend your money on mort-
“gage;—but if principal *and* interest, purchase in
“the Stocks.”

However, if we will calculate from experience, we shall by the following sketch be undeceived with regard to the increasing value of landed property, more especially as it is made independant of any extraordinary efforts of agricultural management.

Dates

Dates.		Value per acre.			Value per annum.	
		£.	s.	d.	£.	
1747 1754 1761 1768 1775 1782 1789 1796	let at	0	10	0	—	50
	—	0	15	0	—	75
	—	1	0	0	—	100
	—	1	5	0	—	125
	—	1	10	0	—	150
	—	1	15	0	—	175
	—	2	0	0	—	200
	—	2	5	0	—	225

Thus the same farm in 1747, sold at thirty years purchase for 1500l., would in 1796 at the same valuation yield 6750l.

And supposing the purchaser of one hundred acres of land in 1747 mortgaged it with counter-security for 1500l. he would have only 75l. interest, at five per cent. per annum, to pay from that time to the present, when the rent of the farm is increased to 225l. per annum, which at thirty years purchase amounts to 6750l. producing a nett profit of 5250l.

Should this account, which is founded on fact, stare gentlemen in the face as an exaggerated calculation, they may satisfy their judgments concerning it by examining their old leases granted prior to the Scotch rebellion in 1745, compared with the advanced rent their tenants are ready to offer in 1796.

I foresee that my valuation of pasture land in its highest degree of culture, at 3l. 10s. per statute acre exclusive of fences, will be objected to by the graziers, under the idea of their not being able to pay so much rent as cow-farmers.

To

To obviate this seeming difference, I assert from experience, as a practical agriculturist, that every marsh farmer of importance, occupying two hundred acres, does or ought to grow twenty acres of wheat, milk twenty cows, and feed twenty oxen and heifers, besides sheep and other cattle. Now, supposing cows to be more profitable than oxen, will not the farmer milk thirty cows, and feed only ten oxen? And by the same rule, will he not, with the approbation of his landlord, (upon paying an equivalent for working the land) grow forty acres of wheat instead of twenty, should he conceive wheat likely to continue so high as nine or ten shillings per bushel?

Should it be objected, that 3l. 10s. per acre for the best pasture is more than a farmer can make of it even with cows, let me ask the reason why farmers are so earnest to rent it at that price, and why the new inclosed lands in their uncultivated state generally sell at auction under acts of parliament from 70l. to 100l. per acre? We have a gentleman in Burnham worth 10,000l. of his own getting, who hath refused 4l. per statute acre for his best pasture, and that from a substantial tenant, who offered to covenant to feed it with nothing but cows. I own at present four acres of pasture in Burnham, statute measure, let on a lease at fourteen pounds per annum. It was purchased by one of my ancestors in the reign of King JAMES I. at seventeen pounds; and I am this day (which is the reason of its being noticed) offered

350l.

35ol. for it, which is but 2ol. short of my demand. This bit of pasture hath been in my possession forty-nine years, in all which time, I have not expended about it 2ol. in agricultural improvements.

I remember when land was let at fifteen shillings per acre, to have sold beef and pork at three shillings per score, mutton at two-pence per pound, cheese at sixteen shillings per hundred, bacon and butter at three pence per pound, wheat at three shillings per bushel, barten-fowls and ducks at eight-pence per couple, and fat geese at two-pence farthing per pound. Now, supposing these several articles sell at present at three times that price, why cannot a farmer afford to give three times the rent for his farm, viz. forty-five shillings per acre, upon an average? and if so, how far short that is of three pound ten shillings per acre for the best land, I leave to the judgment of the occupier, who very well knows the expence of preparing his commodities for the market is not materially increased, if performed as it ought to be by his own family.

It is certain that farmers in this neighbourhood have added to their consequence very much within fifty years. I can send you the names of fifty of them, worth ten thousand pounds each upon an average, amounting together to half a million sterling, of their own or their father's getting within that period. This influx of wealth provides us with a shop, a butcher, a baker, a barber, a surgeon, an attorney,

torney, and some gigs in almost every parish; but when I remember first, none of these existed between the two market-towns of Bridgwater and Axbridge. In Burnham, we had, when I was a boy, but two tea-kettles, and no watch. In the adjoining parishes of Berrow and Brean, there were neither the one or the other.

To return to my subject: I proceed to explain my second valuation table, numbered from one to nine, as hereinbefore stated.

No. I. in the quality column, represents in my field-book the first or best sort of pasture, and by it I mean the old rich grazing land long since in its highest degree of culture, and generally consists of large pieces from forty to sixty acres each, adjoining to some river, village, or turnpike-road. This sort of land may be called pasture in perfection, for it is so rich that no agricultural art can ever make it produce grass of superior quality, and equal in quantity; for if the quantity be increased by force in imitation of a hot-bed, the herbage will have a larger bulk, and for that reason be inferior in quality. The farmer's skill cannot therefore add to the richness of this pasture, for if it could I should not call it the first sort. Neither can it be made worse by any act of the occupier, if kept properly drained; for should he bring it into second by foul feeding and neglecting to destroy the thistles and weeds, a subsequent tenant, by cutting the thistles in an early state, root-
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ing out the weeds, mowing off the tufts of the grafs in the rank parts, and feeding it fine, will, in two years, restore it to its original state of *frsts*, without any other agricultural management whatever. There is a question, which has been long controverted among graziers, viz. whether the first pasture is not more frequently found to consist of a shoal black soil covering a strong blue clay not more than ten inches deep, than it is in a rich mould of a yard deep?

I have observed, from the different state of floods at different periods of time, that the shoal land is situate somewhat the lowest, and therefore vegetates the quickest, which quick vegetation is facilitated from the solidity of the clay not permitting the extreme richness of the soil to penetrate its pores, so as to suck up or draw off that moisture, the quality of which tends to nourish the grafs. Hence it is that it grows faster, is of a finer quality, and will fatten sooner, and even continue to fatten for a fortnight, perhaps a month, such cattle as have been at a stand upon the deep soil. On all these accounts this sort of land is generally deemed the best; but notwithstanding this preference, I hold up the deep pasture in competition with it; for as the blue clay will not permit the hasty downfall of the winter's rain to sink through it, a sort of half-flooding ensues, and it becomes too tender to bear the large cattle or even heavy sheep in the wet seasons. Such land is therefore occasionally rendered useless, which
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the grazier can so much the less afford in proportion as the rents increase. The annual rent of this first sort of pasture, from the recent rise of the farmer's commodities, is now increased to 3l. 10s. per statute acre.

No. II. or the second class of pasture, generally consists of the same sized pieces as the first class, and is not easily distinguished from it, where the grazier hath been in the habit of feeding it fine; and, in imitation of the corn-farmer's manner of checking the growth of wheat, mows off the tops of the rank grass the latter end of May. When I have had any doubt about distinguishing this sort of pasture, my method has always been to consider it as *seconds*, if it lay unlevel upon the whole or uneven in its parts; or if the water stayed on any low part, or if its situation were uncommonly stark or cold, or if any old person remembered it's having been applied to any other purpose besides that of grazing, or if at a distance from houses or good roads; in any, or all of these cases I set it down as *seconds*, and value it in 5s. per acre less, viz. 3l. 5s. per acre.

No. III. or the third class of pasture, may be easily distinguished, as it doth not possess the liberality of nature in so great a degree as the first and second classes. It includes most of the well-drained land from fifteen to thirty acre pieces, that lie plain and level, and have never been mowed or ploughed. It is more particularly applicable to the grazing of heifers

fers than large oxen, and is certainly capable of agricultural improvement. If the proprietor of this sort of pasture can prevail upon himself to lose a little grass, he will do well to winter-fallow the banks upon the borders of the field, and get the mould in a proper degree of tilth to be spread about the land in May or June. It ought to be well drained by deep narrow gutters, dug in the same season of the year, thirty-three feet asunder, omitting every other drain, which should be dug up two years after, and by this method a fresh covering every two years will soon bring forward this land to *seconds*. It is now valued at 3l. per statute acre.

No. IV. or the fourth class of pasture, is also old grazing land lying in the same kind of pieces, and nearly of the same quality as the third class, but with the material distinguishing difference of lying in large wide ridges, that indicates its having been once in tillage, although it may perhaps have been a century since; and being thus injudiciously laid to grass, it never can, in that unlevel state, arrive to perfection. The best purpose to which this sort of land can be applied is, to take off half a dozen or half a score crops of wheat after wheat from it, and then lay it down entirely level to white clover, sown with a crop of barley; and in a few years this land might be brought forward by the usual methods of good husbandry into *thirds*; which is one degree of perfection it never could have obtained in its original uneven state.

state. This class of land is valued in its present state at 2l. 15s. per statute acre.

No. V. or the fifth class of pasture, is generally appropriated to the feeding of cows, and commonly lies in small pieces near the farm-house. It is sometimes united in the summer, and separated in the winter; but oftener divided by large blind ditches, more than half filled by time. Some of these pieces have been formerly tilled, others of them not tilled, which causes an unevenness of surface that makes the improvement of it at a stand. Indeed the mere cow-farmer, considered as a tenant, is too idle to bestow any labour about the land himself. His wife is, however, ready to lend her assistance in the field as well as the dairy; but since the increase in the price of butter and cheese, the injury her fine clothes would sustain will be more than equal to her industry upon the land. But cannot the farmer get labourers to improve this pasture? Yes, but he reasons thus: If I expend five pounds, my landlord will get ten pounds by it; yet he will be so far from thanking me for it, that he will again raise my rent five shillings per acre in the next seven years lease. This class of pasture is valued in 50s. per acre.

No. VI. or the sixth class of land, is generally ranked under the denomination of the best meadow land, or that kind of pasture which hath been formerly in tillage, and laid down plain and level, commonly called New Lays, which by agricultural management hath been brought worth 45s. per acre.

No. VII. or the seventh class of land, is also meadow or pasture that has had less agricultural attention paid to it, or lies so low as to be subject to occasional winter floods, or is at a distance from houses, with narrow dirty roads to it, and no hedge or bush upon it. On all which accounts it is valued in only 40s. per acre.

No. VIII. or the eighth class of land, is commonly meadow, and usually hath the hay halled off from it, without substituting any manure in its stead; for, generally speaking, it belongs to some church, hospital, charity, Queen Ann's bounty, jointures, widowhoods, tenants for life or by courtesy, mortgaged premises in possession of the mortgagee, or some other fluctuating interest. As these lands are mostly small detached pieces, badly fenced, and loaded with some unpleasant incumbrance or other inconvenience, it is the most likely land to continue in its original state of chaos. It is true, it would be the interest of the occupier himself to improve this sort of land, but the next taker being a stranger, would not be bound in honour to continue the same tenant; besides, the owner in expectancy is ever interfering with the occupier, by grasping after the possession on the footing of non-improvement or waste; insomuch, that they become enemies to each other, a separate interest is the consequence, and no good done. This land is commonly let at 1l. 15s. per acre.

No. IX. or the ninth and last division of quality, comprehends every species of bad land we have upon the flat. It is particularly applicable to poor common meads, common fields, intermixed property, or those lands injured by moles, ants, or flooded, or even injured by design. In short, it includes all the several sorts of bad land of every description, that lies lower than high-water mark, and ought not to be valued in its present situation at more than 11. 10s. per acre.

It is to be observed, that the different valuations of the above nine different qualities of land, is only applicable to the statute acre exclusive of fences, which is commonly twenty per cent. in advance upon the customary acres, for estates upon an average called one hundred acres seldom measure more than fourscore.

Upon some of these four last classes of improvable land, the industrious farmer can make two blades of grass grow in future where only one grows at present, provided he will follow the directions I have already communicated to you in my essay upon the improvement of meadow land, printed in your fifth volume.† As the first five classes of pasture cannot, as such, be brought into a lower state of culture from any misbehaviour of the tenant, so there is no necessity of any extraordinary expence in the improvement of it.

The chief directions to the occupier, are very short :—

1. Keep it well drained.
2. Keep the banks low.
3. Check the gross parts with the scythe in May or June.
4. If this do not encourage the cattle to feed upon it, sweeten those parts with any kind of clay.
5. Let the thistles be kept low, and to fat quick, feed fine.
6. Pay a proper attention to the moving the pound, as soon as that part of the close where it stands becomes too gross.
7. Let the water-pit be in the middle of the field, with two or more watering-places, according to the largeness of it.

From this division of marsh pasture land, with regard to its quality, we may draw a line on what closes to plant hedges, and which should lie open, and in some measure answer the long-agitated question amongst graziers on that subject.

It seems clear that lands of the first and second quality, which lie in large pieces, and are applied to the purpose of grazing of oxen, would not be benefited by planting. Let the third and fourth sorts still remain a subject of dispute between the contending parties, until it can be settled by experience founded on fact. These four classes, amounting to near a

moiety of the whole, being out of the question, who will contend that we ought not to plant hedges upon the remaining five sorts? Indeed, whatever arguments can be advanced against it, may be equally applied against planting in general; but the advantages resulting from it, in every point of view, have been so fully experienced, that they need not to be insisted on.

If you ask me whether a *quality man** is not liable to be deceived in the soil? I answer yes, very much so if a stranger; but if bred amongst us, he will never be so far deceived as to raise the third class of land into pasture of the first quality, or lower it into fifts; for if he have a doubt, and err, it is only one degree.† Whereas, if in a grass-growing season, in June, you shew a piece of winter-hayned land, distinguished as *fifts*, to a *London land-taster*, it is two to one against him that he considers it as pasture of the first quality, and errs in favour of the land twenty shillings per acre; but if the same piece be fed bare

† In flat opposition to this doctrine, the Commissioners for inclosing Mark-Moor, acting as *quality-men*, mistook a low part of it to such a great degree, as to allot three acres, wanting fifteen perches, to a single individual common; when the major part of the other allotments were only one acre and thirty-nine perches. By this gross mistake, the low common (as the best land) was then, and is now, worth one hundred pounds more than any other common in that extensive inclosure. An error exceeding two hundred per cent.‡

in the spring, and the season exceedingly dry, I should not wonder to see the same *land-taster* err against the land twenty shillings per acre, and reduce it down to *ninths*. I shall not enter into the arcana of this speculative agricultural quackery, because a practical marsh-farmer will treat it with the contempt it so justly deserves. But, for the comfort of the inhabitants of the flat part of Somerset, they have reason to be thankful that a set of men, distinguished by the term of *land-tasters*, have been sent into this country. For, however notably these *land-empirics* might have acquitted themselves in their own neighbourhood, it is very certain, that when called hither to judge of our rich land, they have commonly erred one hundred per cent. against their employers; and hence it is that you may find in the freeholders' book the names of so many farmers, now living in the flat part of Somerset, very comfortably upon their own freeholds; and who, from very small beginnings, have acquired such large fortunes as to enable the parish-officers to return their names to the sheriff as gentlemen, and entitle them to rank as grand-jurors of the county. Should so great a profit create astonishment, let us recollect the ten parishes in this neighbourhood, the names of which I have already mentioned; and as no gentleman will, with his name, say they are not worth one hundred thousand pounds per annum, they must, at thirty years purchase,

purchase, be estimated at three millions sterling. Now admitting only a moiety of these parishes to be occupied by the owners, may we not reasonably conclude that such owners or occupiers are a million richer than they were fifty years since, or before such manors were dismembered? However, should this calculation be considered as erroneous, as applied to the above ten parishes; will it not, upon investigation, be found *more than true* if applied to the whole marsh?

From the above statement, you cannot but see that if, upon the division of one hundred manors, more or less, one million of money were thus distributed amongst a set of industrious and honest practical marsh-farmers, it will have a much better effect upon society, as applied to agriculture, than if it had continued in the hands of the few former proprietors! Hence, the name of DIAPER will be had in remembrance, by those who believe his satirical poem upon Brent-Marsh to have contributed to the division of the manors; and our sons, when in possession of our title-deeds, will smile at the folly of *land-tasting*, to see for what a small sum we enabled them to drink their wine after dinner.*

* The readers of DRAYTON the poet may observe, in his *Poly-Olbion*, how this flat part of Somersetshire was flooded in his time. He makes the Island of Avalon (now Glaston twelve hides) to be woo'd by the surrounding Marsh, in the following language:

“ Though

If you ask me whether there are no hindrances to agricultural improvements? I answer, Yes: For to say nothing of the intermixture of property, and the great neglect of landlords at a distance, to get their farms within ring-fences, and improve them at their own expence, *tithe in kind* operates as a great check upon the farmer's industry; for since many have discovered that by plowing their old dry land they can grow from thirty to fifty bushels of wheat per acre,

“ Though many a plump-thigh'd moor and full-flank'd marsh do prove
 “ To force his chaste desires, so dainty of his love.
 “ First Sedgemoor† shews this flood, her bosom all unbrac'd,
 “ And cast her wanton arms about his slender waist:
 “ Her lover to obtain, so amorous Audry seeks:
 “ And Godney‖ softly steals sweet kisses from his cheeks.
 “ One takes him by the hand, intreating him to stay;
 “ Another plucks him back, when he would fain away:
 “ But, having caught at length, whom long he did pursue,
 “ Is so intranc'd with love, her goodly parts to view,
 “ That alt'ring quite his shape, to her he doth appear,
 “ And casts his crystal self into an ample meer;
 “ But for his greater growth when needs he must depart,
 “ And forc'd to leave his love (though with a heavy heart)
 “ As he his back doth turn, and is departing out,
 “ The neighbouring marshy Brent environs him about;
 “ But loathing her embrace, away in haste he flings,
 “ And in the Severn sea surrounds his plenteous springs.

† Sedgemoor when divided will be worth a million sterling.

‖ Godney and all the adjoining moors are already inclosed, and are now worth another million. Q. Will any gentleman undertake to prove that all those *moors*, twenty years since, benefited either the publick or individuals one twentieth part of their present value?

wheat

wheat after wheat, for ten or more years successively, they receive no equivalent for reducing those lands back to ninth or the lowest class. But, say only forty bushels per acre upon an average, the tithe in kind of which, at 7s. 6d. per bushel, is 1l. 10s. per acre; which, added to the tithe in kind of one hundred thousand per annum, the rent of the aforesaid ten parishes, we cannot err much if we estimate the full tithe in kind at twenty thousand pounds per annum, supposing the farmer can make two rents of his commodities. In Huntspill, Mark, Burnham, and the two Brents, we have a few more than 500 houses; and if we reckon double the quantity in the other five parishes, we shall then have 1500 houses, the full tithe of which is about 13l. 6s. per house, cottages included. The odd six shillings per house goes into the pocket of the curate, and the thirteen pounds belongs to the incumbent!

From the preceding statement, it clearly appears that marsh-lands doubled their value every century for the first four hundred years after the Conquest; and from the Reformation to the Scotch rebellion in 1745, they were doubled every fifty years; but from that time to the present, they became more than doubled in twenty-five years: How is this accounted for?

This doubling of rent in twenty-five years will not hold good in upland, hilly, or corn parishes. It will

will only apply to marsh-lands, the lords of which having dismembered their manors amongst their lessees, stirred them up to the study and practice of agriculture. Suppose a lessee for three lives, of one hundred acres, valued in fifty pounds per annum, gave twelve years purchase for the fee, it amounted to six hundred pounds, and is only a tax upon the farm of thirty pounds per annum, reckoning the interest at five pounds per cent.

As a moiety of this country was formerly in tillage, probably fifty acres of this farm were, when purchased, arable; but if so, it was immediately laid down to pasture, and is perhaps now brought forward to the fifth class in point of quality, and at present worth fifty shillings per acre: whereas, had it remained on lease, it would no doubt have continued in tillage, bearing fifteen bushels of wheat per acre, if recruited every third year with a fallow; and would have been worth at present only twenty shillings per acre.

As this practice of laying down arable to pasture hath been so universally adopted by the land-owners as occupiers of their own freehold, and enforced by landlords in their covenants with their tenants, will it not furnish a better reason for the scarcity of wheat, if generally adopted in other countries, than such as are commonly given us in the publick prints?

Should

Should you require me to give an account of purchases that have doubled and trebled themselves in a few years, by way of proof I could send you a long list of very many; but, as this might give offence, I shall only inform you that I purchased Edy-mead-Farm in the parish of Burnham, at eleven hundred pounds, and mortgaged it for one thousand pounds; and although the mortgagee's agent valued it in only fifty pounds per annum, yet as I was in the habit of improving it, he was content to let his money remain upon it more than twenty years before I paid him off. I now let it at one hundred and forty pounds per annum, and two years since refused three thousand guineas for it, having then demanded three thousand five hundred pounds; but will not at present sell it for less than four thousand pounds!

It is not yet three years since I purchased at publick auction, forty-five acres (computed measure) of pasture land, for three lives, at 810*l.*; I now let it at 140*l.* per annum! The farm to which this pasture belonged sold at 1380*l.* and is now let at 200*l.* per annum. These instances are, as well as more, to prove the great increase of the rent of landed property, and the great advantages the land-owners derive to themselves from their respective purchases.

You know the annual rent of Somersetshire at the Revolution, was estimated at near three hundred
and

and seventy-five thousand pounds. If it doubled itself in about fifty years, it must a little before the Scotch rebellion have amounted to three-fourths of a million; and if, after this period, it doubled itself in twenty-five years, we have in 1770 a million and half; and if again doubled at this present time, the annual rent of Somersetshire amounts to three millions, one million of which is comprehended in this essay, as lying lower than high-water mark.

You will therefore perceive that the preceding account of pasture-land must not be considered as general, it being particularly applicable to low marsh land, improved by draining and inclosing, and including the waste lands inclosed under fundry acts of parliament. To give a general idea of inclosing moors, you should be informed that in 1769, I became acquainted with the late Rev. Sir GEORGE STONHOUSE, bart. and purchased for him at 5000*l.* an estate now worth near 20,000*l.* During the transaction of this business, I discovered to him that Churchland Commons, in the parish of Wedmore, valued in 2*ol.* each, were truly worth 1000*l.* each, if inclosed! He hereupon encouraged me to promote inclosing, insomuch that I actually measured and mapped twenty thousand acres of moors and commons upon speculation; and persevered in writing pamphlets to prove the utility of inclosing, till the publick mind became convinced.

These

These lands have been since inclosed; and suppose we value them at forty shillings per acre upon an average, they are worth at twenty-five years purchase a million sterling! which is a clear profit of that amount to the land-owners, without injury to individuals.

I am, with much respect,

your obliged and cordial friend,

RICHARD LOCKE.

To Mr. Matthews.



ART. XV.

*An accurate mode of buying and selling Wheat,
by weight: illustrated by a Table.*

[By J. WOODS, gent.]

IN order to prevent imposition of every kind, it would be necessary to establish the following regulation, namely, to oblige the Millers and Merchants to buy, and Farmers to sell, their Wheat in every market in England by the eight-gallon bushel, struck with a *round strike*, supposing it to weigh fifty-nine pounds, or four half-hundreds and twelve pounds to the sack of four bushels, exclusive of the weight of the sack, and the Farmers to be accountable for that weight: not to make up the deficiency of light Wheat by adding to the quantity, nor by making less measure of the heavier; but to abate in proportion to the deficiency, and to be paid over and above the price agreed on in the same proportion for a greater weight; by the following rule; namely, for every pound on the sack over that weight to be paid the price of a gallon and a quarter of flour* per load (of ten sacks,) and for every pound per sack deficient to abate in the same proportion: for instance, Suppose the price agreed on to be 12l. per load, then, in case the wheat should weigh one pound per sack over, the Miller would be obliged to pay 12l. 1s. 3d. per load;* if two pounds over, 12l. 2s. 6d.;

6d.; if three pounds over, 12l. 3s. 9d.; and if four pounds over, 12l. 5s.; and so in proportion for any greater weight, and to make abatement in the same proportion for every pound deficient.

Thus all Wheat would be nearly of the same value per load, and ordinary or bad Wheat would not be bought so much dearer than the best; as the price to be paid would be in proportion to the weight or real value, though the price agreed on would be the same for the bad as for the good.

This would do away the advantage arising to Farmers, by making their samples a little drier and cleaner than the load is sent in; but it would have a tendency to induce them to make their Wheat cleaner, for the sake of more weight and a better price, neither would there be any inducement to make short measure.

This custom would soon become familiar to both buyer and seller, and the price to be paid would be ascertained in a moment, for every description of Wheat, by the annexed Table.

*. I think the retail price of a gallon of Flour at the Mill ought always to be at the rate of one penny in the pound of the price of the load of Wheat. For instance, when Wheat is 12l. per load, the Flour should be sold for 12d. per gallon; if 14l.—14d.; and the same proportion for any greater or less price. Therefore the price of a gallon and a quarter must be five farthings, which makes the advance to be five farthings to the pound of the price of the Wheat per load, for every additional pound in the weight per sack, which is the standard on which this Table is founded.

ART. XVI.

Brief Remarks on Practical Improvements.

[By J. F. esq.]

DEAR SIR,

I HAVE read above thirty of the Surveys lately made for the Board of Agriculture, many of which are well written, and contain much valuable information; they all agree that a commutation for tithes, a general inclosing bill, and the granting of leases, are essential to any great improvement in the cultivation of lands in this Island, as mentioned in my former letter to you.

If all this had been done one hundred years ago, instead of sending our men and money to America, it is probable our national debt would have been one hundred millions less than it is, and our land at home worth one hundred millions more than it is, and capable of supporting at least a million more people. Dean TUCKER's advice, to "colonize at home," was certainly right; and I hope that dear-bought experience will at length teach our governors to follow it.

I find that a threshing-mill (to be worked by water or horses) is in high repute in Scotland, and the Northern counties of England. Pray inform me if you are acquainted with its utility, and if any one is
made

made and approved of within the circle of your society.*

I see in YOUNG's Annals, an account of his experiment of feeding hogs on potatoes, on a large scale, which did not prove very profitable. I think that pigs pay less for their food than cattle or sheep—for this reason, their skins yield nothing, and the price is kept down by thousands of them being fed on what bad threshers leave in the straw, and on wash, grains, and other trash, which other profitable animals will not eat. The wool of a sheep is twice and often three times the value of the flesh by the pound; and it is probable that, taking the whole weight of the animal alive, it may require as much food to produce a pound of flesh and even bone and offal, as a pound of the finest wool worth eighteen-pence or two shillings, such as the Ryeland sheep yield. It would be well if all farmers knew, that small bones and light offals are very valuable qualities in creatures that are to be fed and sold by weight.

I am, with great esteem, dear sir,
your obedient humble servant,

J. F.

* A model of one of these valuable machines may be seen at the Society's Rooms: they are found eminently useful for large farmers; and smaller machines for similar purposes are now invented for smaller farmers, which promise great utility.

ART. XVII.

Miscellaneous Remarks on National Improvements.

[By an old Correspondent.]

DEAR SIR,

Glamorganshire.

SINCE I had the pleasure of seeing you here, I have enlarged my farm, which has been pretty considerable for above twenty years. And, that I may not be considered as a mere theorist, I will add, that I have for near forty years had the care of some of the largest estates in this county.

You saw some acres of good *mangel-wurzel* near my house, and I have in the same ground (for the conveniency of being near my yards and ox-sheds) raised crops equally good from my own seed several years. The directions in the *ABBE DE COMEREL*'s book, translated by *Dr. LETSOM*, are very plain, and I have always succeeded. The excellence of this plant is, that I have never known any insect destroy either the root or the leaf, nor have I known the people steal them as they do cabbages, potatoes, and turnips; so that I can stack them out of doors, any time before the frost comes; and by sowing the seed in March, or the beginning of April, in rows, I never miscarry; but find enough where they are too thick to fill up the vacancies, though I never find the trans-

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planted ones so large as the rest, which is the case with tap-rooted plants in general. I have generally potatoes, cabbages, borecole, roota-baga, and turnips, and endeavour to try and prove all things in farming, that I read of in the Annals, or your useful collection, or any other book that is published on the subject, which, of all others, I think of most use to mankind. My land is too stiff for carrots and parsnips, which I regret, as I know that they are very nutritious and keep well.

Happy would it be for this Island, if all men in power were patriots, and knew the great importance of promoting and encouraging agriculture.

If they would read the County Surveys, lately delivered to the Board of Agriculture, they would see that near one-fourth of Great-Britain is waste and almost entirely barren, neither ploughed nor planted, but full of bogs, brambles, heath, ling, and other trash, so as to bane and injure more stock than the value of the little herbage the commons produce. Custom has given all the tenants (and in some cases all the inhabitants) of adjoining manors a right of turning their stock, promiscuously, on these commons; and though a few acres of turnips inclosed would do them more real service than such liberty on 500 or even 5000 acres of common, such is the perverseness of mankind, that the lord and tenants have never, I think, been known to agree to inclose
and

and divide the commons or waste lands of a manor, (I do not mean common fields, which are unknown in this country.) This makes it necessary to apply to parliament, which is attended with so much expence and trouble as to amount to a perpetual bar, and therefore, for above 200 years past, an infinite number of useful hands have been, and now are, emigrating to America, and thus become aliens, if not enemies, to the mother country.

Every lawyer knows that it is easy to frame one general inclosure bill, which ought to be passed for the publick good, at the expence of the publick, as well as one general turnpike bill, empowering every man having 50l. per annum in each district, to act as a trustee or commissioner.

The established church is generally considered as a part of the constitution, but it certainly wants reform as much as any other part of it. Before the use of money one-tenth of the produce of the land was allotted to the resident officiating minister, for the purposes recited in the 21st of HENRY VIII. requiring residence, viz. to instruct the people, relieve the poor, and keep the parsonages in repair; but the Roman-catholicks perverted the intention, by taking the great tithe to support many idle people of both sexes, in religious houses; that despot, out of revenge against the pope for not granting him a divorce, destroyed those religious houses, and, instead

of restoring the great tithes to the church, sold some of them to the great lords, whose descendants now enjoy them, and illiberally prefer their own interest to the publick good. Other parts of the great tithes are enjoyed by bishops, and deans and chapters. But how far this system conduces to the publick good, and the general instruction of the people, all those that live amongst them are best able to judge: unfortunately those who are most acquainted with the evil, have it least in their power to redress it. In Scotland I think the clergy are paid by a rate or levy in money, and no tithe in kind is collected; chiefly owing to which, many estates have been doubled and many trebled in value, within the last forty years; and there is no doubt but more harmony would subsist between the clergy and the laity, and consequently religion would prosper more, if some such mode were adopted in England and Wales. A new valuation may be made every twenty years or oftener, and the income of the clergy and other owners of tithe would increase, not only as money decreased in value, but as all estates were improved at the expence of the owners and occupiers, which would advance the revenues of the church much more than they ever will increase, whilst tithe in kind is rendered; for whatever right the church may have to one-tenth of my land, or one-tenth of the spontaneous or ordinary produce of it, neither the church nor the lay-impropriator

priator can have any right to the money in my pocket; it is optional in me, and in every other man, whether he will lay out 8l. or 10l. per acre in liming, marling, sub-draining, fallowing, and improving land, when he knows, that taking one-tenth of the crop before he is repaid his expences, will turn the balance of the account against him, and that he had better lay out his money at interest, or in some other way, and live in idleness (as thousands do) to the great injury of the publick. I fortunately was able, when I first began to amuse myself with farming, to compound with the owner of the great tithe; and that encouraged me to grub, moot, inclose, drain, and cultivate, (at more expence than the value of the freehold) a great quantity of rough land, not ploughed within memory; and I have raised above 10,000l. worth of grain, (where none would have been raised if I could not have compounded) and supported many poor families (for I keep no farming servant in my house) in tilling land that otherwise would still have remained uncultivated, to the great loss of the community: and from this instance, and many others within my knowledge, the loss to the nation for want of general inclosing and road bills, a commutation for tithe, and a power for all tenants for life to grant some term (say seven or eleven years) certain, exceeds all computation. Some lease is essential to good husbandry; and I really think, if all those laws were made, that

that in ten years one-fourth more corn would be produced, besides an improvement of stock and all other produce of land, and that a million more people would be supported, of whom, half the number would be employed in agriculture, planting, draining, inclosing, &c. These sentiments have long prevailed in my mind, from many years experience, and observation.

My excellent friend, Mr. JONAS HANWAY, (one of the most humane and patriotick men I ever knew) near forty years ago, published a plan for registering seamen and manning the navy without pressing; and good Dean TUCKER, when the Americans resisted the laws of this country, and began to rebel, wisely wrote, "Let them go,—give them up,—colonize at home:" if this advice had been taken, the last and the present war might have been avoided, and we should have been one hundred and twenty millions less in debt, and probably have had five hundred thousand men more in the Island; and with the above-mentioned salutary laws, our improvements would have been inestimable. But good advice avails nothing, whilst so much profligacy and dissipation prevail; corruption is so general, that the worst consequences are to be dreaded. The Board of Agriculture is an excellent institution, and may do much good, if government will admit improvements to take place; if
not,

not, the best patriots will give up all hope, and submit to bear the evil they cannot avert.

I am, your's, &c.

PHILANTHROPOS.

To Mr. Matthews.

ART. XVIII.

Experiment on the extraordinary Quality in Butter made after the Lancashire manner.

[By Mr. H. HARPER, of Bank-Hall, near Liverpool.]

THE Lancashire method of preparing milk for butter, previous to churning, may be seen in the Lancashire Report, p. 74. A few words may be here added, on working the butter, after being collected from the milk; which, if too warm, cold water is added to harden the butter, whilst working in its first state over the churn, and to which a little salt is then added, usually about one ounce to the pound. After standing some time in a cool place, it should be worked twice over from the lump by hand, and so effectually as that there be not the least remains

mains of the milk to be observed amongst the butter, a matter highly essential to its goodness, and its preservation, if intended for keeping, although too much neglected, on a principle of the saving of labour, and gain of weight by the milk yet remaining in the butter; and yet the amount of labour saved, and weight gained, will be (as Mr. HARPER observes) not two-pence in the pound.*

Upon this mode of making butter, the two following experiments were made by Mr. HARPER, in 1791; July 28th, he ordered two churnings to be made from the milk of one meal, viz. one collection of milk and cream after the usual manner of collecting milk; and the other of cream only; and which were both treated alike, according to the Lancashire method of souring the milk, previous to the operation of churning; fifteen pounds of each kind of butter, prepared and worked as usual, but with a double portion of salt, as the butter was intended to be kept, were put into separate mugs, and covered over with about three half pints of brine, and which stood in a cool cellar till August 1792; both mugs were then tried with a butter scoop, and they were both found

* Any thing near two-pence in the pound would be a very large saving indeed, on such an article as butter! but becomes of no importance if the quality be rendered greatly inferior. EDITOR.

to be perfectly sweet and good; the butter was returned again to the place whence it was taken, and the hole filled up again with what butter had been taken out with the scoop, which forced out the brine that occupied its place during the trial; this was afterwards repeated again in August 1793, in the same manner as before, and still found perfectly sweet and well tasted. About five weeks after the last trial, both mugs were broke by the rolling of a cask; but, as the experiment had succeeded so well, the salt was ordered to be washed out, and the butter made up into pounds according to the usual way, and exposed along with fresh butter in the Liverpool market, and there sold, after being kept two years and seven weeks.† If the accident of breaking the mugs had not happened, the butter, after so fair a trial of being able to keep, was intended for a present to a brother in the West-Indies.

† It may be said this is not the first butter sold in a market, in the goodness of which the purchaser upon trial has been disappointed!—But Mr. HARPER upon this head observes, he has now to regret he did not distribute the whole thirty pounds amongst as many different families, friends or foes, who might have testified to the truth of the fact, and the good quality of the butter thus preserved.

ART. XIX.

Method of killing Slugs in a Garden.

[Communicated by WILLIAM CROSLY, esq; in the name and on behalf of Capt. SHANK, of Dawlish in Devonshire, the inventor.]

TAKE a barrel of *coal-tar*, remove a considerable quantity so as to give space at discretion, pour on the remainder a quantity of water, let it stand two or three days or more; this water will be powerfully impregnated with a quality noxious to slugs, and if poured on them they will immediately die. And to prevent the depredations of slugs among young plants in a garden, this gentleman recommends the scattering of this impregnated water, by means of a watering-pot, on the ground before and after sowing, at pleasure.

ART. XX.

Brief Observations on different qualities of Wool, as produced by the Spanish mixture in breeding.

FROM observations on the wool produced from different crosses of sheep with the Spanish ram, viz.

Short

Horned

Horned sheep,
Dorset,
Wilts,
Mendip,

Polled sheep,
South-Down,
Ryeland,

the peculiar property of the Spanish wool, viz. the fineness of the pile, and the abundance of yolk contained in it, which keeps the wool moist to the points, seems to be communicated in a much greater degree to the horned sheep than to the polled sheep; the wool of the latter not appearing to be mended above one-third, whereas that of the former is at least one-half better: perhaps as the Spanish rams are horned, and partake much of the properties of the old Dorsetshire sheep, the crosses may be more congenial than with polled sheep.

June 8, 1795.

. THOMAS DAVIS.

N. B. Spanish wool abounding so much with yolk, should not be washed on the sheeps backs; it hurts the sheep, and after all, the wool cannot be got clean with cold water. It is shorn in Spain before washing.

ART. XXI.

Experiment in Planting Potatoe Shoots.

[By R. HILL, esq.]

SIR, *Plymouth, near Cardiff, South-Wales, 1795.*

IN consequence of the recommendation of your valuable Society, for trials to propagate potatoes from

from the sprouts or fibrous shoots from the potatoe, I have, for two years last past, cultivated the potatoe from the shoots, both in my garden and fields; though in no very extensive degree. The last year in my garden I set forty shoots, and earthed them up at various times with fresh earth; on taking them up in November, I had a produce from them of upwards of two Winchester bushels. I also planted with shoots in the open field about one-third of an acre, with the plough, in the usual manner of planting sets from the potatoe, by setting the shoots in the furrow, and turning the ground over them with the next furrow. As soon as the tops appeared, and the weeds began to shew themselves, I caused them to be stirred with the plough, and earthing them with fresh earth by the plough, twice in the summer, and once hoeing and cleaning by the hand by labourers, the top was strong, free from curl, and on taking them up in the autumn, I had a crop equal from the shoots to that from the potatoe plants. The harvest the last year was rather unfavourable in our country for potatoes; and, through anxiety to get them together, my bailiff omitted taking a particular account of the produce, but he assures me, they were equal to those raised from the cuttings of the potatoe.* Being ill in the gout at the time,

* I generally have a produce of about three hundred Winchester bushels per acre.

I was prevented from attending particularly myself; but I am so well satisfied that the planting potatoes from the shoot will answer the purpose, that if I can bring my ground into tillage this year, to receive them, I will plant at least two acres.

I remain, with great respect, sir,
your most humble servant,

R. HILL.

N. B. Mr. Hill's further communications on the subject will be acceptable.

ART. XXII.

An account of a Crop of Wheat sown and managed in a peculiar way.

[By a Member of the Society residing in Cornwall.]

IN September wheat was sown amongst turnips, and covered by hoeing, hurdled and eaten off by sheep late in April; immediately afterwards the ground was sown with grass seeds, which were harrowed in: the produce of wheat was twenty bushels, or very nearly, to an acre. The land a sandy gravel, in a very high situation, and totally unfit for wheat in general: but this was allowed to be as good a crop,

crop, by farmers in the neighbourhood, as if the land had been fallowed. Lime was put on before the turnips were sown; the root of grafs was good, but the summer following was so dry, that it was forced to be pastured instead of mown, which circumstance shews how unfit the land was for the culture of wheat in a common way.

R. L. G.

ART. XXIII.

On the folding of Hogs.

[Written by a Gentleman of great respectability in a hop county, and well known to the Society: who, in a letter to the Secretary, enjoins the suppression of his name.]

SIR,

AS the quantity of manure wanted for our hop-grounds has naturally led the farmer in this country to consider every expedient by which it might be increased, it frequently occurred to me, that hogs, from the richness of their manure, might be used to advantage in this way; and, as I fatten a considerable number every year for their dung, I was determined to try it.

My

My first experiment was made round apple-trees, (with those intended to be fatted) and a moving hutch placed within their reach; but I soon perceived, that the inclemency of the weather at the season of fattening would not permit this out-door method to be extended to any great degree, and that unless it could be begun at an earlier period, no great benefit would arise from it.

Observing, however, that hogs in general are very fond of clover, and having always a quantity intended for hay, that is twice cut, and the hog potatoe (of which I cultivate great quantities) often growing near it, I made trial of a fold consisting of forty ruddle gates of eight feet and half length each, pretty close at the bottom, on the clover stubble, and put seventy hogs of different ages into it, allowing them six or seven bushels of potatoes in the day in their fold at first, and ending with ten, which, with the young clover, was as many as they would eat; with this number of hogs, inclosed within the number of gates above-mentioned, we folded this year eleven acres of clover stubble, between the 19th of September and the first of November, and had a very good sprinkling of manure left upon it. The hogs are always driven into a yard at night and littered, as the coldness of the weather might otherwise cramp them; and towards the end of October a very few beans are given in the fold, when they first go into it.

The

The greatest part of these hogs are fatted in the course of the winter; and though it may be supposed they do not gain much in the fold as to flesh, yet they improve considerably in growth; and the effects of the fold in the second crop of wheat is so evident, that I have no doubts of the propriety of continuing the practice.

The expence of the fold, allowing for the improvement of the hogs, was rated at thirteen shillings per acre, and which, in a country where dung cannot be purchased at any price, is very trifling, compared with the return in straw and grain.

Our meadows are annually mended in the same way, reserving the aftermath for sheep, which, if in fatting, give half an oil-cake a day each, in addition to the fold of grass; and if store sheep, the grass only, leaving the ground that has been fed open for them to range in. I did the same with the hogs this year, and gave them potatoes of the last year, and continued it to advantage till the clover was fit to receive them.

The hogs, when running about the yard, had as many potatoes as when in the fold.

All these methods answer very well; but unless I could communicate my whole plan of farming, gentlemen may be misled if they adopt particular parts. My time is too much occupied in other business to admit of this.

I mean

I mean by a second crop of wheat, the second on the same manuring, viz.

Courſe of crops.

Turnips:—barley, (too ſtrong for ſeeds to be ſowed with it:)—beans—wheat—clover—wheat; which I call the ſecond crop.

From this courſe I have thrashed out a field of wheat this year, which has yielded five quarters five buſhels per acre; but the ground is remarkably good. The field next to it yielded only four quarters ſeven buſhels. They were both after beans, but I have not yet thrashed out what was ſowed in folded clover, nor will the trial be a fair one, as the irregularity of laſt ſeaſon did not allow us to ſow it till the end of January.

Your moſt humble ſervant,

* * * * *

ART. XXIV.

Characters of ſundry Apples known in the Weſt of England for various uſes; ſamples of which were communicated, by Mr. CROCKER, of Frome.

1. **JERSEY.** Thick ſkin, ſpongy, ſweetiſh bitter, good for cider. *

2. *Du Ann*. Thick skin, spongy, melting, quick, is tolerably rich, yellow flesh; good for cider.

3. *Marigold Spice Apple*. Spongy, mellow, little spicy, little austerity, yellowish flesh, on the whole but middling fruit.

4. *Clarke's Pumo*. Quick, firm flesh, may be good for baking.

5. *Pine's Red-streak*. Melting, quick, pleasant, juicy, deemed too large for cider.

6. *Wine Apple*. Small, quick, cool, pleasant flavour, but not rich, flesh tinged with red.

7. *Black Apple*. Quick, pleasant, firm flesh, tinged with red.

8. *Buckland*. Flat, insipid, may be an early fruit.

9. *Butter Box*. Mellow, quick, little austerity, yellow flesh.

10. *Winter Red*. Pleasant, tender, white, firm flesh, handsome fruit.

11. *Upright*. Quick, spongy, not rich, yellowish flesh.

12. *Herefordshire Red-streak*. Quick, spongy, little austere, yellow flesh, good for cider.

13. *Slater's No. 20*. Quick, pleasant, tender, very handsome, rich-looking fruit.

14. *Red Cornish*. Quick, sharp, very tough flesh.

15. *Somersetshire Red-streak*. Quick, sharp, spongy, melting, white flesh, rich looking fruit, good for cider.

16. *Pitt*

16. *Pitt Crab*. Quick, spongy, melting, juicy, pinky flesh, and when fully ripe, good for cider.

17. *Staverton Red-streak*. Melting yellowish flesh, rich looking fruit, may be good for cider.

18. *Full Sack*. Quick, rather sharp, austere, rich looking fruit.

19. *White Sour*. Strong, quick juice, very mellow and melting, promises to make strong cider.

20. *Green Cornish*. Very tender and juicy, pleasant flavour.

21. *Josey*. Quick, tender, pleasant, rich looking fruit.

22. *Slater's No. 19*. Very melting, quick, juicy, not very rich.

23. *Orcheston Pippin*. Tender, rich flavour, and good-looking fruit.

24. *Bickley Red-streak*. Little, melting, handsome fruit, but rather too large for cider.

25. *Jack Every*. Firm flesh, dry, sweet, good for sauce.

26. *Ladbroke Red-streak*. Melting, quick, pleasant, yellowish flesh, good for cider.

27. *Slater's Permain*. Quick, pleasant, firm flesh, handsome, on the whole a capital fruit.

28. *Slater's No. 21*. Quick, pleasant, tender, handsome fruit.

ART. XXV.

*Remarks on the County Surveys, with a Letter to
Sir John Sinclair on Draining.*

DEAR SIR, *Cotfield near Leith, July 13th, 1795.*

I HAVE read with much satisfaction Mr. BILLINGSLEY's account of Somersetshire, and beg you will thank that gentleman, in my name, when you see him, for the pleasure it has afforded to me. It was not to be expected that all the counties should be so well done, but it is a great matter to have got so many executed in a way that does credit to the country. Had the whole been done as Somerset and Wilts, it would have formed a very valuable body of information to future ages; as they are, perhaps, never was there given so perfect an account of the present state of agriculture in any other nation on the globe.

I send you inclosed a copy of a letter to Sir JOHN SINCLAIR, on a subject that, after having lain dormant for twenty years, I did not think I should have had occasion to bring before the publick in this manner. The fact is, I was greatly surpris'd to see 1000l. voted by parliament as a premium to a man for practising a very simple mode of draining in certain cases, that I myself had, by a very moderate stretch of thought, discovered and carried into effect about
thirty

thirty years ago, and had published to the world twenty years now past. Though I am by no means very eager in quest of that kind of honour which some people covet so highly, of being an inventor; yet I could not help concurring with my friends in thinking that it would be improper to let the present pass without at least taking some publick notice of it. The letter, of which the inclosed is a copy, was sent to Sir JOHN at the date it bears: from him, I had an answer a few days ago, in polite terms excusing himself for not having adverted to my claim; saying, that Mr. ELKINGTON is a mere practical man, who reads, he believes, no books either on agriculture or any thing else, and therefore he supposes he never saw or heard of mine: that to the best of his information he began to practise draining about thirty years ago, and has been gradually improving in that art ever since, till he has at length attained to the perfection he now possesses. All this may be very true; but if I actually practised his mode of draining thirty years ago, in as great perfection as he now does, and if I publicly described, twenty years ago, what he has not yet described, it would seem that my claim to notice is at least equal with his. The truth is, I think the matter so simple that it never came into my mind to think of looking for a publick premium for it, of any sort. I sent a copy of this letter to London, to be inserted in some of the papers of greatest

greatest circulation, which you may probably have seen in them: But lest these should not fall in your way, I send the inclosed copy to be used or published as you may think proper.

I remain, with sincere esteem, dear Sir,

your obliged humble servant,

JAMES ANDERSON.

To Mr. Matthews.

To Sir JOHN SINCLAIR, bart. President of the Board of Agriculture.

"SIR, *Cotfield near Edingb. 30th June, 1795.*

"I USE the freedom to trouble you at present on the subject of draining, as adopted by Mr. ELKINGTON, of Lancashire, not with a view to detract from the merit of that gentleman, nor to find fault with the remuneration you have obtained for him, but merely to set you right in regard to a matter of fact that concerns me, which might easily escape your notice.

"It is evident, you suppose, that the mode of draining ground, which has been successfully practised by Mr. ELKINGTON for some years past, is peculiarly the invention of that gentleman himself. That this is not the case admits of evidence which, I suppose, you will allow to be undeniable. It is now twenty years since a book, entitled, *Essays relating to Agriculture and Rural Affairs*, was published by me; and if you will take the trouble of turning to the second essay

essay in that work, which is, *on draining bogs and swampy ground*, you will there find the method of draining, by means of *tapping*, which has since been practised by Mr. ELKINGTON, fully explained; and the principles upon which it may be practised clearly developed, by the aid of illustrative figures, discriminating the cases in which that mode would be improper.

“ I do not understand that Mr. ELKINGTON practised this method of draining *before* the publication of that work : Nor do I mean to *assert*, that he adopted the practice from the directions there given. I readily admit, that the principle is so simple, and so obvious to every considerate mind, that it would certainly be nothing extraordinary if he, by his own reflections only, should have discovered it as well as I did. There is only *one* particular in his practice that I myself had not actually practised before the publication of that work, viz. the making the tapping by means of a *boring instrument* : but even this I have particularly described, as you will find in the following words at page 181, (third edition, vol. i.) of these essays. After describing the effects of tapping by sinking *small pits*, and explaining the circumstances which will render it effectual, it is added: “ I have often imagined “ that the expence of digging these pits might be saved, by “ *boring a hole through this solid stratum of clay with a large* “ *wimble (an auger) made on purpose*; but as I never experienced this, I cannot say whether it would answer the desired end exactly.”—Neither can I *now* say whether Mr. ELKINGTON grounded his practice on this hint or not; but I may safely say, if he did not, he might have done it. And as I could not have borrowed it from him,* if there

* These Essays were first published, anno 1775—Robinson and Sons, London.

be any merit in the discovery, I have, assuredly, a just title to claim it.

“ I wish not to throw out any insinuations to the prejudice of Mr. ELKINGTON; who, by a proper degree of management on his part, has great merit in having turned the attention of the nation towards a mode of draining, which, when the principles upon which it is grounded are fully understood, and properly applied, will be found to be equally cheap and efficacious, as I, from an experience of it for near thirty years, can safely assert. But it is a mistake to think it can be *universally* applied. There are many cases in which it can be of no use; and if it be there attempted, it will be only labour in vain, as I have fully demonstrated in the treatise referred to. Whether Mr. ELKINGTON did actually discover this mode of draining of himself, or adopted it from the very plain directions given in that treatise, is of little consequence to the publick. In either case, he has equally the merit of having introduced it *into practice* in the Southern parts of this Island: For the single fact, that he has been *supposed* to be the first inventor of it, is the clearest proof that this part of my treatise, *by how many so ever it may have been read*, has been allowed to remain, in a great measure, a dead letter even until the present hour.

“ As my intention in publishing that essay, doubtless, was to benefit the publick, I owe, perhaps, thanks to Mr. ELKINGTON for having forwarded that design. It is not impossible that the time may not be far distant, when I shall be laid under an obligation to some other person for bringing into notice, *as a new invention*, the mode of embanking rivers, which is described in these essays with equal clearness; and which will, in practice, be found to be alike cheap and efficacious. An obligation of this kind was conferred upon

me a good many years ago, without my knowledge of it at the time, by a Mr. BRODIE, I think the name is, when he brought forward, what he calls, *the Patent Bath Stove*, the principle upon which that stove is constructed having been explained, and clearly illustrated by means of a plate, in a treatise of mine on smoky chimneys, that was first published in the year 1769;* but this particular was little adverted to for several years, until Mr. BRODIE, by a little *proper management* brought it into notice.†

“My ideas; freely communicated to the publick, have been a source of emolument or of honour to others—my own *reward* has been the satisfaction of having done what I know to be right, and the *honour* of being indirectly flattered by compliments that were publickly appropriated to others.

“Wishing you success in your laudable undertakings, which, if properly supported, cannot fail to be attended with effects highly beneficial to the nation, I have the honour to be, with due respect, Sir,

“your most humble servant,

“JAMES ANDERSON.”

* The third edition of which is now on sale.—Robinsons, London.

† It is generally supposed that Mr. BRODIE has realised about *one hundred thousand pounds* by this contrivance.

ART. XXVI.

A simple and effectual Preparation of Seed-Corn.

[By Mr. JOHN WAGSTAFFE.]

GENTLEMEN,

THERE has been long sought for, yet in the opinion of some long since obtained, a perfect cure of the disease in wheat and other grain, provincially known by various names, as *smut*, *foot-brand*, &c. but one and the same disease.

From the partial judgment of many individuals, it has been asserted, that such and such causticks, salts, and washes, have been completely destructive of this bane; yet, however such individuals may have escaped its malignity, the repeated use of their recipes has not succeeded with others to whom their process has been communicated; but the simple means which I now wish to lay before you, I am persuaded, from a series of repeated experiments, every person who duly practises it will be exempted from its immediate bane; and a district of country, pursuing the same means, perhaps escape a future contagion.

The means are simple, and no other than immersing the seed in pure water, and repeatedly scouring it therein, just before it is sown or dibbled on the soil; whether well, spring, or river water, be used, it

is

is indifferent, but repeated stirring and change of water is essential to remove the possible particles of infection that may have imperceptibly adhered to the seed: Thus purified, the subsequent crop will be perfect in itself, and its seed (I am persuaded) successively so likewise, if there are no adjacent fields from whence this contamination may be wafted. Before I give you a series of experiments which have confirmed to me the complete cure of the disease in question, permit me to observe, that many years since, believing that this corrupt substance of smut occasioned its perpetuation, I took some grains of wheat from a stock that had been known not to be affected with smut; these grains I blackened with its dust, and the succeeding summer confirmed my opinion, as near half the produce was smut-balls. • Here I stopped, and in my own small practice used some of the strongly recommended nostrums that were said always to effect a cure, and which apparently they did, as I uniformly steeped the grain in rain water, before I made the addition of a disgusting fluid, or commixture of I know not what strange substances. •

About two years since, I was called upon by an intelligent farmer (ROGER TREFFRY) of Devonshire, who *confidentially* (because he had a subscription in view) laid this simple process before me; I was immediately convinced, by comparing what I had practised with the principle he advanced,

I then

I then repeated my former experiments; I took a handful of pure wheat, and blackened it by rubbing in as much smut-brand as I was able; after which I divided this corrupted handful into two equal parts, retained one part with all its corrupt impregnation,† and the other part I well cleansed in water from its baneful particles: these two parts I again subdivided into three portions each, two of which I dibbled in different situations, viz. a portion of the pure and impure, near to, but distinctly separated from, each other; and the other two portions some miles from the former two: the remaining two, the corrupted and the cleansed, I committed to the care of an accurate neighbour, for his putting into the ground, at which I was present, and witnessed the exactness of the separation. The products of these several trials were uniformly the same; the unwashed was generally smutty, the washed good in quality, one single set excepted. Thus, fully convinced and confirmed of the efficacy of the means recommended, I engaged the farmers of a parish (Baburgh) to advance me a guinea for ROGER TREFFRY's publication, assuring the principal* occupier, that he would

† Wholesome water has a tendency to promote vegetation, while some of the fetid and corrosive fluids have a tendency to destroy its principle; in course, some or much of the seed perishes in the soil.

* This farmer had been subject many years to brand, notwithstanding his constant use of saline and other substances; at length he changed these

would be convinced of its certainty without waiting the issue of a harvest. The consequence of which has been, that I have neither seen nor heard of a smutty ear in this district; which, I believe, hath in no preceding year been free from them. In fine, not only from the experiments already adverted to, but from others which might be adduced, I am fully persuaded that the confirmation of this discovery (and it has been many years back suggested) will lead to an incalculable advantage; for it is not alone a preservation of the most indispensable article of human food from an appearance and flavour truly disgusting, but while it renders it more nutritious, augments its quantity; for every smut-ball might have been a perfect grain, by using the simple process referred to. To this let me add, that other kinds of bread, as well as our more general beverage, may be augmented and improved, since barley and oats equally

thrust for a recipe from a gentleman, to whose opinion he paid much deference, but it proved, that on this change he had more brand than before: he thence resolved to use no more preparations, but brought all his seed-wheat to the pump, and has not had (he says) any brand since. And, which is still more confirming, a gentleman farmer in this vicinity applied to me for R. T's. process, in consequence of his whole crop of wheat being so excessively infected with smut, that his threshers daily, at the close of their labour, cleansed themselves *in* water, they being, as he expressed it, black as chimney-sweepers; yet his subsequent crop of wheat from *this* seed, scoured in repeated washings, escaped the taint, save a piece of land in contiguity with the homestead, which this gentleman ascribed to the pollution which fled over it from divers dressings.

escape

escape this contamination and diminution, if their seeds are equally purified.

I am, with great esteem,
your respectful friend,

JOHN WAGSTAFFE.

Norwich, 1796.

ART. XXVII.

*Queries respecting Draining Lands, destroying
Moss, and planting Coppices.*

[In a Letter to the SECRETARY.]

SIR, *Piercefield near Chepstow, Jan. 17th, 1796.*

IN passing through Bristol a few days ago, I took an opportunity of providing myself with the seven volumes of the Letters and Papers of the Bath Agriculture Society, expecting that I should derive from them considerable information, as well as amusement; and although, from the very cursory view which as yet I have had an opportunity of taking of this collection of papers, I must confess that I have not (generally speaking) any reason to think I shall be much disappointed; yet I must at the same time be candid enough to acknowledge, that on some parts

parts of these subjects, materially connected with the objects of your society, there appears to be a want of information on subjects which I hardly believe can have escaped the observation of your numerous and valuable correspondents.

1st. The *draining of lands*, a most essential part of agriculture, has been very slightly touched on; and in short, a young farmer like myself, can derive very little instruction upon this subject from your papers.

I have heard much of an improved mode of draining by a Mr. ELKINGTON, and should have expected to have met with some account of it in your papers; but either respecting this mode, or that of draining by under-drains, as is generally practised in this and the neighbouring counties, scarcely one word has been said.

2^{dly}. In many parts of this country, and many others, the finest parts of the grounds are totally over-run by a thick coat of *moses*, which effectually precludes vegetation.

I should have expected to have found amongst the proceedings of your society, some mode of destroying *moses*, either by means of a particular manure, or by that of tearing it off the surface, by means of some improved drag, or machine, so as to bring such grounds into a state of vegetation, without being compelled to convert them into tillage.

3^{dly}.

3dly. I see not a syllable said upon the subject of the slime or ooze left by the tide upon the shelving banks of the Severn, and similar rivers where there is a considerable flow of the tide, which I have some reason to believe might be made a most valuable manure for several sorts of land.

These are the only circumstances to which I at present am desirous of calling your attention, further than to beg the favour of you to give me from yourself, or procure for me from some correspondent, an explanation upon a subject which I am glad to observe has claimed so much of the attention of your society.

The subject to which I allude is, that of planting of coppice wood, and the value of these woods when cut and disposed of.

I have generally understood that our coppice woods in Monmouthshire are as good as in any county of England, and in greater extent; but few or none of these woods, after fourteen or sixteen years growth, are often sold for more than as many pounds; I may say, rarely for more than fifteen shillings for every years growth.

When therefore I read in your proceedings, that woods of the same sort, and without the advantages of situations which many parts of Monmouthshire possess, in place of from nine to twelve pounds an acre, are sold for seventy pounds an acre; you will readily believe it must have created some surprize.

Asst

Ash trees (as common a coppice wood as any in this country) have been particularly mentioned.

In vol. i. page 166,* Mr. EDMUND RACK gives you a particular statement of the produce of one acre and half in ten years, producing 48l.

If Mr. RACK be living, I should have been glad to have asked him the size of the 3100 poles, sold for 39l. 6d. and whether 2000 poles are not rather an unusual produce upon an acre.

In vol. i. page 137, Mr. J. FLETCHER gives the same astonishing account of the value of ash.

In vol. v. page 271, a correspondent with the secretary, who signs W. B. B. gives an extraordinary account of the produce of an ash plantation in Warwickshire, of fourteen years after planting, felling for 70l. per acre; and likewise gives an account of the mode which was observed in planting, which is clear enough, excepting in one particular, page 275, from the beginning of the first line, reading on the nine following lines, which confuses the whole process. The throwing of the earth one way and digging of it another, without some explanation by a drawing or otherwise, cannot be understood.

I am at present clearing of 50 to 60 acres of land only applicable to coppice wood, and should be glad to receive a lesson from the Warwickshire planter.

* There are two or three editions of this volume, and of several others.

It would be satisfactory to know to what particular purpose ash is applicable in Warwickshire; the size and number of poles upon an acre that could sell for 7ol.?

If you can send me any explanation or information upon any of those subjects, at your leisure, I shall consider myself much obliged thereby; and as for the mode of planting, did I understand it, I should very willingly give it an extensive trial this season.

I am, Sir,
your most obedient humble servant,

W. WOOD.

ART. XXVI.

Reply to the foregoing Enquiries.

[By the Rev. W. B. BARTER.]

DEAR SIR,

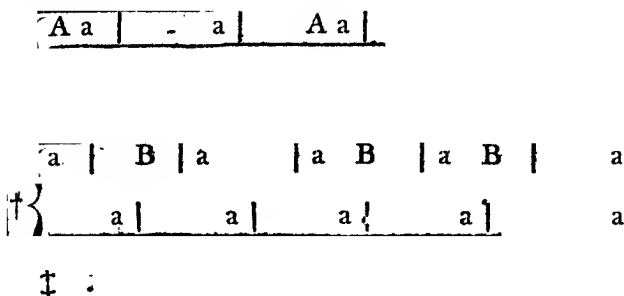
Timbury, Feb. 1, 1796.

ACCORDING to your request I have given due attention to Col. Wood's letter, and shall be very happy if any thing I can suggest may be considered as satisfactory answers to his queries. The subject of draining lands, it is true, does not make any conspicuous figure in our memoirs, as the principle is now so generally understood and practised.

Mr.

Mr. ELKINGTON's new mode of boring lands, if I do not mistake, is detailed in YOUNG's Annals of Agriculture. If the Colonel's lands that are overrun with moss be found, and will bear winter-feeding on them, hay given there to cattle during that period, will very much alter the nature of the herbage and destroy the moss; folding and feeding sheep on it also will produce the same effect, without the trouble of ploughing; the weight of the cattle in the winter would, in my opinion, be most efficacious in destroying the texture of the moss. The slime or ooze of a river, overflown by the tide, I have in many instances seen tried as a manure, but every where discontinued on the account of the expence and trouble of bringing it into a proper state for throwing abroad on the land; it has, however, been of service: small quantities may be tried, from which experience will be derived to justify a perseverance or the contrary. The confusion the Colonel alludes to in an account of ash planting, in vol. v. page 273, at the top, arises altogether from the wrong pointing the sentence; had it run thus, "with his spade "digs the earth from the line on his right to the "distance of twenty-one inches; on his left, to the "depth of twelve or fourteen inches," the whole would be plain and intelligible. It is only saying, in other words, that the labourer is to throw one half of the ground taken out of the ditch on one bed,

and one half on the other; if it be better to be understood by the following sketch, it is much at his service:



Should the Colonel's land to be planted be dry, and not boggy, I should recommend it to him to make his beds at right angles to the hill, or at least oblique; by that the beds may retain as much of the moisture that falls as they can (without being stagnant) which is peculiarly grateful to ash; it would be also desirable to extend his distance of planting the ashes from three feet and half, as specified in the memoirs, to five feet or at least four feet and half; because, though not more than two or three poles

* The dotted line divides the trench or ditch into two equal parts, one half of which is thrown on A, the other on B.

† Bed on which the ash plants are laid horizontally. a a a are the ash plants laid horizontally.

‡ Ditch as before.

may

may arise from each root for the first fourteen years, three times the number will probably be the quantity at the end of the second period, which will have but bare room in five feet space. The use made of the poles in Warwickshire was for hop-poles, hurdles, and hoops, which were sent to London, and for fencing new inclosures, of which many were at that time taking place in that neighbourhood; the number of faggots also arising from the spray was not inconsiderable. My principal information was from my friend FIENNES SANDERSON MILLER, esq; of Rodway near Kineton, Warwickshire, who, on the Colonel's mentioning my name, would give him any satisfaction he wished. Lord WILLOUGHBY DE BROKE has many acres of ash planted in the same neighbourhood, which, I have been credibly informed, have yielded the same produce. An aptitude in the land to the growth of ash must be supposed, and the planter's attention must not be taken off from his infant charge, till at least four years from the time of their being committed to the beds; or in other words, they must be kept well weeded. I have planted about one hundred and fifty, as a specimen for my *collier neighbours*; they are about five years old, which I have requested you to inspect; my neighbour Mr. STEPHENS has this year planted several in this mode, which is by far the cheapest of any yet ever discovered.

Should I not have been fortunate enough to have made myself sufficiently intelligible to the Colonel, you have my leave to inform him, that I shall readily and with pleasure give him any further explanation he may wish to propose; or if at any time he comes to Bath, and would submit to be shewn the way to Timbury by you, I should be particularly happy to wait on you both; and satisfy him, by an ocular demonstration, of the possibility of ashes growing to a great size in a short time, by proper cultivation.

I am, with great regard, dear Sir,

your's very sincerely,

WM. BRUDENELL BARTER,

To Mr. Matthews.

ART. XXVII.

On the use of Lime mixed with Gunpowder, in rending Rocks and Stones.

[By H. D. GRIFFITH, esq.]

SIR, *Caerhun near Conway, North-Wales, 1796.*

HAVING been for some time in the habits of perusing your interesting papers on agriculture and other subjects, I am induced to lay before

the society a circumstance, which, though perhaps familiarly known to them, might, if more generally divulged through the channel of their publications, be of infinite advantage to the publick.

In clearing my lands of the heaps of stones with which this country every where abounds, I found the quantity of gunpowder used in the operation to amount to a considerable sum at the end of the year ; and as the price of this article has been increasing of late to an enormous amount, I had recourse to an expedient by which the expence of it has been materially diminished.

I weighed out two pounds of gunpowder, and one pound of quick-lime well dried and pulverized, which after having been thoroughly mixed with each other, I delivered to the blaster with directions to apply it in similar quantities as he would have done the powder by itself. I then selected six of the hardest granites I could find for the experiment, and the effects of the explosion were precisely the same as if powder alone had been used. It now occurred to me that this might be fallacious, and that a smaller proportion of gunpowder would produce the same effect as a larger ; I accordingly ordered the man to bore holes in a similar number of stones of the same texture and size with the former, and to put in a lesser quantity of powder by one-third than he would have done if it had been left to his own management.

ment. The stones were separated by the shock, but the difference in the effect was manifest to every person in the field; those with the mixture of lime and powder having been much more effectually broken and shattered than the others. After the success of this experiment, I have constantly adhered to the practice, and am so satisfied of its utility, that I wish to see it more generally adopted. One thing is certain, that a *mixture* of quick-lime and gunpowder will *explode*; and if this mixture were used merely as a train of communication to the powder within the stone, what a national saving would it be in works carried on upon an extensive scale, such as the numerous quarries and mine-works of this kingdom!

It will give me great pleasure to receive your opinion upon this experiment, when the gentlemen have satisfied themselves about it, and in the mean time remain, with great respect, sir,

your very obedient

humble servant,

HUGH DAVIES GRIFFITH.

To Mr. Matthews.

gree excusable, if I have over-rated the advantages which I conceived were likely to result from such an investigation to the parishes themselves, if it were only attempted in a few detached places. I have stated those supposed advantages at length in the Return itself; I need not then repeat them here. Should the society consider this paper as at all worthy of their acceptance, I shall think myself highly honoured.

I am, Sir,

your obedient humble servant,

W. M. PITT.

To Mr. Matthews.

N. B. THE Society, on examining the sundry papers communicated by this ingenious and publick-spirited gentleman, found the scheme above alluded to, to be a state of the population of the parish of Corfe-Castle in the county of Dorset, superbly printed on seven folding sheets, full of columns and descriptions, in which the names, ages, circumstances, and employments, of all the inhabitants are distinctly marked; an undertaking which must have cost much labour, but which may nevertheless serve as a model for other country magistrates desirous of knowing the state of the district over which they preside, and to answer other valuable

luable ends mentioned by Mr. M. PITT. But, on account of the extent of those tables, they were deemed inadmissible into this volume. They remain for inspection at the Society's Room.—Respecting the plan and description of the Gaol at Dorchester, (which lie in less room) it was supposed the articles would not only do honour to the parties concerned in the work, but be useful and acceptable to the publick in proportion as they should be extensively known. The Committee therefore resolved to solicit the consent of Mr. M. PITT, to publish them in the Society's memoirs.

To that request the following letter was returned:—

SIR,

I HAVE just received the favour of your letter of the 20th instant, and I am highly flattered by the notice that has been taken of the papers I ventured to send to the society; if any part of them should be deemed worthy of a place in the society's publications, they are not only entirely at their service for that purpose, but I shall consider it as a very great honour conferred upon me personally.

I am, Sir,

your most obedient humble servant,

W. M. PITT.

Portchester Barracks near Fareham, June 29, 1796.

To Mr. Matthews.

DORSET

DORSET COUNTY GAOL.

IN this building are united the County Gaol, Penitentiary House, and House of Correction. It stands on an eminence, on the north side of the town of Dorchester, on a piece of ground still called the Castle, and which was formerly the site of a building of that description, at the foot of which flows the river Froome. It is bounded by a wall, about twenty feet high above the surface of the ground, which, from the turnkey's lodge, situate at the north side of it, completely surrounds the whole of the buildings, courts, &c. &c. The ground on which it is erected was, in a most handsome manner, given by FRANCIS JOHN BROWNE, esq; one of the members for the county. The architect was the late ingenious Mr. BLACKBURN, the friend of HOWARD!

The buildings consist of the lodge; of the keeper's house, with the chapel, debtors' day-rooms, female fines and female debtors' rooms, visiting-rooms for male debtors, fines and felons, infirmaries, &c.; and of four wings detached from, but communicating with, the centre building on each story by means of cast-iron bridges from the several galleries. There are separate sleeping cells for eighty-eight prisoners, which are distributed in the several buildings, as may be seen by a reference to the annexed plans; and two
 airy

airy dormitories for male debtors, each containing four beds, to be used in case the number exceeds that which can be accommodated in the debtors' wing; besides four cells for condemned prisoners, light and airy; four over these perfectly dark, yet airy, for the refractory; and six reception cells; which last are fitted up in the lodge. The distribution is such, that not only the male prisoners are separated from the female, and the felons from the debtors, fines, &c.; but those of each description are subdivided into classes; and for each class, by means of distinct stair-cases, separate subdivisions of the prison are appropriated, with courts, work-rooms, &c. to each. The subdivisions allotted to every class appear on the plan, except those to female debtors and female fines, who have each a commodious room, with every possible convenience, over the male debtors' dormitories, and under the two infirmaries, separate and detached from every part of the building, except the keeper's house and court, to which they have access through the chapel.

These subdivisions are for the accommodation of the following classes:

Male debtors.

Male felons.

Male convicts, Classes I. and II.

Ditto——Class III.

Male fines.

Male

Male bridewell prisoners.

Female debtors.

Female felons and bridewell prisoners for trial.

Female convicts, and bridewell prisoners convict.

Female fines.

Reception cells.

Condemned cells; or for king's evidence, when not used for the condemned.

Refractory cells.

Infirmary for males.

Infirmary for females.

In the reception cells in the lodge, prisoners are placed immediately on their entrance, until they can be examined by the surgeon, and thoroughly cleaned, for which purpose there are a hot and a cold bath. If in a foul or infectious state, they remain there till the surgeon pronounces them fit to be removed into the interior parts of the prison; they are then sent to their proper classes, and all felons are apparelled in the gaol uniform, and their own clothes, if fit to be preserved, are fumigated in a kiln, and laid by in the wardrobe till their liberation, or are delivered to the care of their friends. There are also two rooms in the lodge for the habitation of the taskmaster, and a small one for one of the turnkeys; a wardrobe; a room containing one of Stockdale's mills for grinding corn, and every other requisite for grinding and for dressing the flour, where all
the

the corn used for supplying the prison with bread is ground, and which is found to answer extremely well; a committee-room for the magistrates to transact business in; an office for the gaoler; a bakehouse and brewhouse, with iron boilers, an oven, and other conveniencies for cooking for the prisoners; and on the top of the lodge there is a flat roof covered with copper, on which executions take place, in the view of all criminal prisoners.

Besides cocks and washing troughs in the different airing grounds, there is an engine which throws water to the several cisterns on the top of each building, from whence every part is plentifully supplied with water, including the several water-closets which are allotted to the use of each distinct subdivision of cells.

It should be observed, that no sleeping cells are on the ground floor; by which arrangement the custody of the prisoner is rendered more secure, and his health is not liable to be injured by the rising of damp, and by means of air-holes constructed in the back of each cell (except in the upper stories, where they are placed in the arches of the cells) and which are so managed as to exclude conversation, while they admit air, its thorough circulation is preserved.

When visitors come to see debtors, they are permitted immediately to go to their visiting-room, the
inner

inner door of which is constantly kept locked, the outer one open; there are two windows opening from it, one into each debtors' day-room; these windows are barred, but a table goes through each of them, one half being in the debtors' room, the other half in the visiting-room. Debtors are not therefore excluded from the society of their relations or friends, yet the visitors are not allowed in general to come into the rooms, by which means many irregularities are prevented. In particular cases, the keeper, where he finds it proper, unlocks the inner door, and suffers the debtor to take his friend with him into his cell, or court. Fines and felons have not the same indulgence, their friends cannot see them but in the presence of the keeper, the three gates of their visiting-rooms being all locked. The keeper, on application, lets the friend into the space between the first and second gates, and stands himself in the space between the second and third, the prisoner remaining in the court; he can thus effectually prevent the introduction of weapons, liquor, or other article, the use of which is forbidden in the prison, as well as be a check on any improper conversation. In the case, however, of some known relation of the party or other person having real private business with the prisoner, the keeper previously searches the friend, and then admits him or her into the space between the second and third gates, and
he

he himself retires. The friends of debtors are permitted to remain, if they please, from ten o'clock in the morning till four in the afternoon; the friends of fines and felons are only allowed to remain a short time with them, except in cases of real business, when the keeper indulges them at his discretion. After four o'clock no stranger is to remain within the walls.

There are likewise several work-rooms, in each division of the prison; some for single persons to work in, in solitude; others for two, three, or more persons; for the purpose of employing the prisoners in such work as they may be capable of, with store-rooms, and every other convenience to render the arrangement complete; besides a considerable edifice for the purpose of carrying on the manufacture of hats, and which is situate between the court of the male fines, and that of the penitentiary prisoners of the third class. This last was built at the expence of WILLIAM MORTON PITT, esq; one of the members for the county, as a small testimony of his gratitude, for the confidence reposed in him, and for the repeated favours conferred upon him, by his constituents. This manufacture has already been tried for three or four years with great success; the prisoners, who work in solitude, are employed in the first stages of it, and those parts of the work which require the labour of several persons working together,

ther, are performed by those who by the rules of the prison are indulged with a lesser degree of restriction. The produce of the work is divided into shares, of which each prisoner has a share allotted to him, and placed to his account, to be paid him at the time of his liberation; another share is allowed to the keeper, to encourage him to be attentive to this object; and the remainder is accounted for to the county, and already defrays a very considerable proportion of the expences of the prison.

The books kept in this gaol are formed on the best models which could be procured; among them the three, of which specimens are here given, are the most deserving of notice.

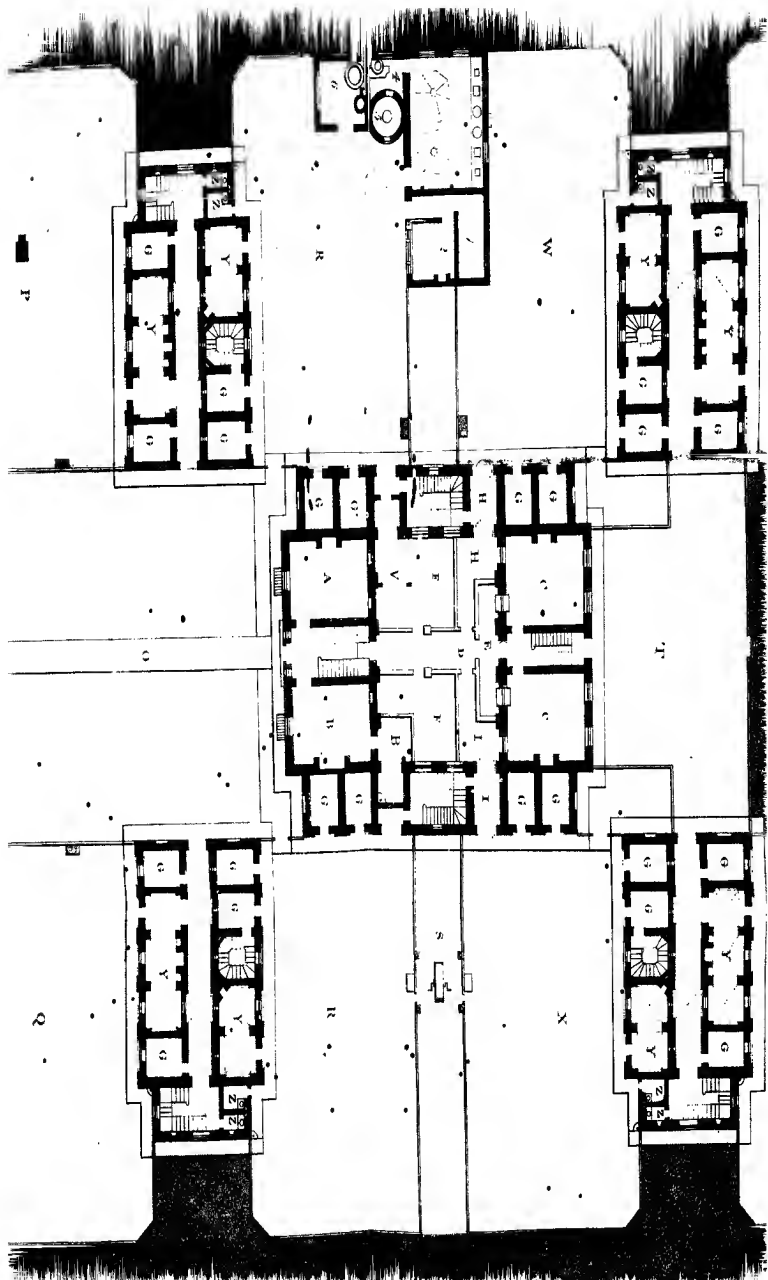
The infirmaries are airy, with washing troughs and water-closets, and a communication to a separate flat on the different sides of the roof, one for each sex, for the benefit of convalescents; there is a dispensary between the two, for the convenience of the surgeon; and a pew from each, opening into the chapel, for the use of such sick prisoners as may be able to attend divine service.

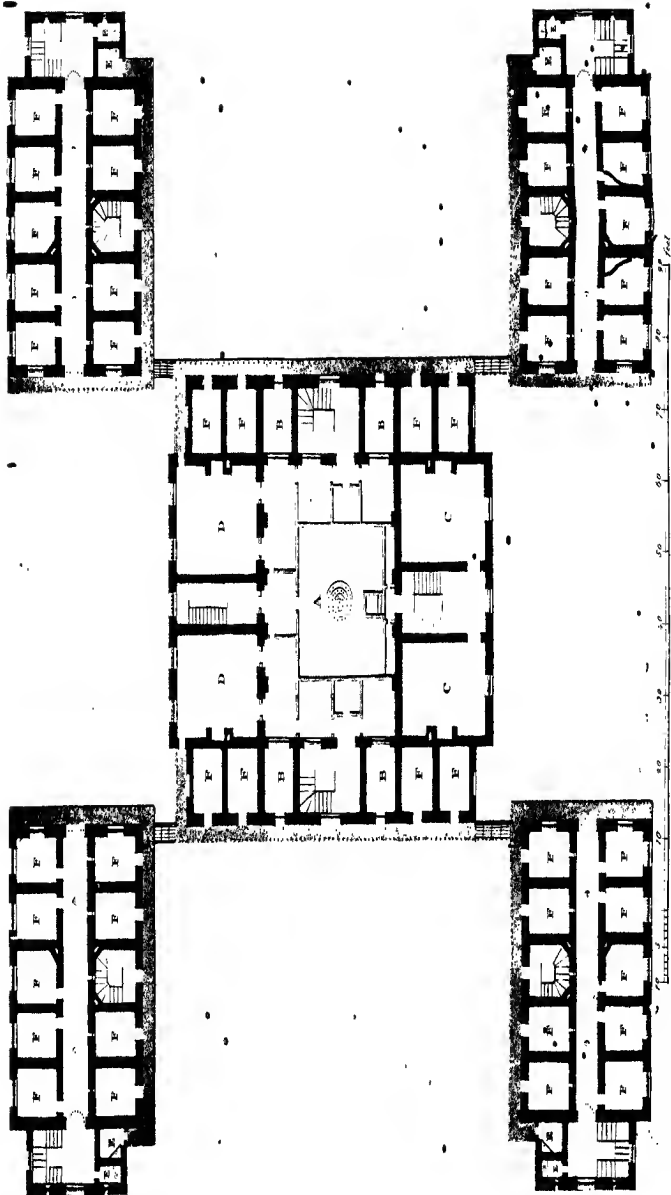
Around the outside of the boundary wall, is a spacious esplanade laid down to grass; and on the north side, in the front of the lodge, a handsome slope to the river, with trees planted on its banks.

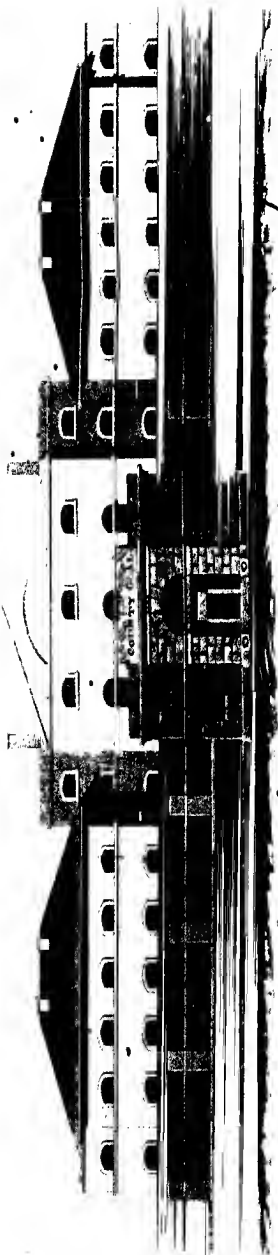
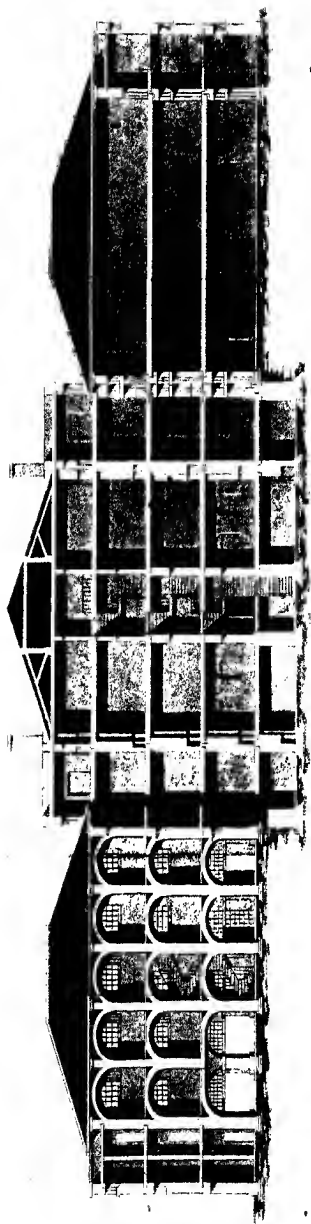
The plan had the full approbation of the late excellent Mr. HOWARD; the expence has amounted

to about 16,000*l.* The regulations for the police, and interior management of the prison, are chiefly taken from Sir GEORGE O. PAUL's rules for Gloucester gaol and bridewell, with some alterations to adapt them to this building; and the two principles, of industry, and reflection by the judicious application of solitude, are happily combined.

The work was begun in the year 1789, and was finished in 1795; has been well executed by Mr. JOHN FENTIMAN, of Newington-Butts, Surry; and is by many thought to be Mr. BLACKBURN's chef d'œuvre in this branch of architecture. £.10,000 was borrowed at *four per cent.* towards this work, and the rest of the expence, as well as the interest of the 10,000*l.* has been defrayed and paid out of the county stock, and out of the produce of the sale of the old gaol and old house of correction; and the average number of county rates, of about 500*l.* each, raised during the six years this work was proceeding, has not exceeded the average number which had been collected for two years previous to its commencement, consequently the burthen cannot have affected, or even have been perceived by, any individual. The gradual reduction of the debt of 10,000*l.* is to commence immediately, and the whole is to be liquidated within fourteen years from the time of borrowing the several sums respectively, agreeably to act of parliament.







10 20 30 40 50 60 70 80 90 100



REFERENCE.

No. 1.

PLAN OF THE GROUND FLOOR.

A Keeper's Parlour	Q Female Penitentiaries Airing Ground
B Keeper's Kitchen and Scullery	R Male Penitentiaries Airing-Grounds
C Debtors Day-Rooms	S Engine to raise Water
D Passage	T Male Debtors Airing-Grounds
E Debtors Visiting-Room	V Male Bridewell Prisoners Airing-Grounds
F Store-Rooms	V Scales
G Working Single-Cells	W Male Fines Airing-Ground
H Fines Visiting-Room	X Male Felons Airing-Ground
I Felons Visiting-Room	Y Arcades for Day-Rooms for the several Classes
K Committee-Room	Z Water-Closets for the several Classes
L Keeper's Office	
M Brewhouse	
N Baths Hot and Cold	
O Keeper's Court	
P Female Felons and Bridewell Prisoners' Airing Ground	

- Fig. 1. Room for Unfinished Goods
 2. Finishing Shop
 3. Making Shop
 4. Stiffening Shop
 5. Stove on Ground Floor
 6. Dying-House

* A Stove, Wool-Room, and Bow-Garrets, &c.
 on the one pair floor over the above.

No. 2.

PLAN OF THE ONE PAIR FLOOR.

A Chapel	C Keeper's Apartments
B Cells for Condemned, and over these Cells for Refractory Prisoners	D Debtors Sleeping-Rooms
	E Water-Closets
	F Sleeping-Cells.

No. 3.

THE SECTION AND ELEVATION

ART. XXIX.

A Method of preparing Canvas, so as to make flexible Tubes for conveying fresh air into Coal-Mines; and for other useful purposes.

[By Mr. LANSDOWN.]

TAKE one quart of boiled linseed oil, and a quarter of a pound of the gum elastick—boil them gently together—they will so boil near two hours before the gum will be dissolved. Then add three quarts more of boiled oil, one pound of resin, one pound of bees-wax, and one pound of litharge of lead—boil all up together, and with a brush lay it warm, and evenly, as a coat, on the canvas.

This prepared substance will be as flexible as can be wished, without cracking—will resist wet or damp, and will be found durable, if common prudence be exercised in the care of it.

HENRY LANSDOWN.

Mells, 1795.



ART. XXX.

On the Culture and Value of Potatoes, as communicated to the Society by the Author, in a copy of a letter to the Right Hon. Lōrd SHEFFIELD.

[By Mr. BARTLEY.]

MY LORD,

Bristol, 1795.

I CANNOT help feeling particular pleasure in observing the culture of the potatoe to be encouraged in so spirited a manner by the Board of Agriculture; persuaded as I am, that there is not an article in the known circle of husbandry more deserving the fostering care of an institution which may well be stiled the most noble.

The society having condescended to invite a general correspondence, I am induced to address your Lordship as to one of its most discerning members, if haply any observation of mine may in a slight degree be thought pertinent to the subject.

I have had many years experience in the culture of this root, and perhaps was the first in the neighbourhood of Bristol who pursued it on an extensive scale.

The largest crop I ever saw was of my own raising, (though I have heard of a greater produce) and the quality was equal to any thing I have seen; the
farinaceous

farinaceous matter proving to be considerably more than one-fourth of the weight of the root. The crop was two hundred sacks per statute acre, each sack weighing two hundred and twenty-four pounds. The mode of managing the crop, nature of the soil, &c. are set down in the third volume of the Bath Society's Papers, p. 288.

But my principal design in adverting to this instance, is to excite an attentive regard to the prodigious quantity of vegetable food produced from an acre of ground, equal at least to two hundred bushels of wheat; for I have long since made up my mind as to this fact, that a sack of potatoes of two hundred and twenty-four pounds containing one-fourth part of farinaceous matter is at least equal in value, as an article of food in the family of a poor cottager, to a bushel of the best wheat; and the unanimous concurrence of this description of people will bear me out.

It is true, that crops like this are seldom obtained; however, I believe they might be obtained not unfrequently, by a judicious attention to the circumstances of soil, situation, season, &c. and, speaking in general terms, I am firmly of opinion that one hundred and twenty sacks of potatoes per acre may be more certainly raised than twenty-five bushels of wheat; at the same time it must be admitted, that some soils are totally unfit for the culture of potatoes:

a very

a very stiff clay, for instance; and this not only because a light crop would be the consequence, but also that wet heavy soils induce a diminution of the farinaceous matter; thus the roots of the very best sort are apt to degenerate in unkindly soils—again, there are such as will not be reclaimed by the most favourable.

The most valuable sort I conceive to be that which contains the greatest proportion of farinaceous matter. I have made a great number of experiments in this respect, but never extracted more than between one-third and one-fourth of the weight of the root; in some instances not more than one-seventh has been obtained. So that it seems essential not only to hit upon a right sort in the beginning, but to preserve it by a proper attention to the nature of the soil.

I have made excellent bread with a mixture of one-third boiled potatoes and two-thirds wheat flour. But if ever potatoes should be introduced as an article in bread, on a general scale, I doubt not the proper mode would be, in the first instance, to extract the flour or farinaceous matter by means of some suitable apparatus, that might easily be invented.— Thus a determinate rule would be established of apportioning the due quantity of potatoe flour, and of wheat flour, to be employed in the composition. Besides it would be the only effectual method of securing,

ring, throughout the winter, this invaluable vegetable food from the fury of the frost. Possibly, indeed, it might be preserved sound in this form for years, concentrating within a moderate volume the essential part of the subject.

I know from experience, that, in respect to this vegetable, there are seminal varieties, touching which subject I have lately addressed the Secretary of the Bath Society.

Your lordship's attachment to agricultural pursuits, I flatter myself, will be to me instead of an apology.

I have the honour to subscribe, &c. &c.

NEHEMIAH BARTLEY.

ART. XXXI.

Queries proposed to the Society by an Economical Committee of Parliamentary Gentlemen in London during the high prices of Corn, &c. in 1795; and answered,

By the SECRETARY.

1. **W**HAT mode of supplying the necessities of the poor, during the present scarcity, has been pursued in your part of the country?

2. What

2. What is now the actual rate of common labourers wages in your part of the country?

3. What is the ordinary proportion of common manufacturers wages to those of common labourers in your part of the country, and how far has the former affected the latter?

4. Has there been any, and what, rise in the wages of labour, both summer and winter, for the twenty or thirty years preceding 1794-5; and if any, at what periods, and in what degrees, has it taken place?

5. Have you known, in fact, unequal prices of labour in places near to each other, which may be supposed to have resulted from the operation of the poor laws?

6. What rise in the price of the necessaries and principal conveniencies of life has taken place during the same period, distinguishing each article as particularly as may be?

7. Is task-work common in your part of the country, and how much can a man earn per day or week in this way?

8. What appears to you to have been the effect, in point of population, of increasing the size of farms, and inclosing commons; and has the quantity of land in tillage been thereby so much diminished, as that notwithstanding the improvement of what has continued in tillage, the quantity of grain produced has been less than before?

9. Has

9. Has the practice of ingrossing small farms prevailed within your knowledge, and if so, with what effects has it been attended?

10. What were the habits of living among the labouring class twenty or thirty years ago, and what are they now; do they now live harder than they did then, or than they did at some intervening period?

11. Did the poor, twenty or thirty years ago, use meat and beer, more or much more than they did till the commencement of the present scarcity?

12. Do potatoes constitute, about you, a material part of the food of the labouring class?

13. Do the poor in general appear tolerably contented in their situation, or otherwise?

14. What proportions and descriptions of the labouring class, when not disabled by age, or situation, or sickness, receive parish relief, how often, and how long?

15. Have the poor-rates been progressively increasing for some years past; and if so, in what sums, and in what proportions?

16. Does any, and what, proportion of the labouring poor about you belong to Friendly-Societies, or Box-Clubs; and what appear to you to have been the effects of such institutions?

17. Were the common labourers wages sufficient to maintain a man, his wife, and four or five children, without parish relief, before the commencement of the present scarcity?

18. Have

18. Have the ale-houses increased in your part of the country within the last thirty years, and in what degree, and what have been the effects of such increase?

19. Do the morals of the lower orders appear to have improved, or to have grown worse, within the last twenty or thirty years; and are they more or less frequent in their attendance on publick worship?

20. What proportion of the children of the poor may be supposed to have no schooling, or whether they have more or less of it than formerly?

21. Would it be politick to hold out additional encouragement to the growth of wheat, and if so, what encouragement?

22. Would it not be politick to encourage the use of oxen in agricultural draught, and in place of that of horses?

23. Have cottages in general less land about them than formerly, and what have been the effects on the comfort and morals of their inhabitants?

ANSWERS.

1. AMONG farmers—selling *corn, flour, or potatoes*, or all three, to workmen, at reduced prices. Among inhabitants of towns—bread, potatoes, or rice, at reduced prices.

2. Various.

2. Various. Among *husbandmen*, from 1s. to 1s. 6d. per day.

3. Manufacturers get perhaps from 1s. 6d. to 2s. and 2s. 6d. per day. How far manufacturers wages have affected those of labourers, or vice versa, is hard to say. The proportions are much as formerly.

4. Small advances in those periods; but perhaps on the average about one-sixth, and those mostly within the last twenty years.

5. The *variations* in the prices of labour, in contiguous places, are small, and must necessarily remain so; for such variations being subjects of common conversation, and knowledge, are uniformly regulated by such knowledge, &c.

6. A considerable rise, doubtless less in corn, till of late; but mostly in butcher's meat, say one-third; in butter, one-third; in cheese, one-third; in malt, near one-half; in groceries, say sugar, one-third; candles and soap, one-fourth. The rise gradual, but mostly within ten or fifteen years.

7. Task-work is common, but not uniform. It is difficult to state an average advance, it being so much in proportion to agility and industry; perhaps one-fourth more earning by *task* than *day work* may be fairly assumed: but task work gives latitude to irregular working and improper expence.

8. Increasing the size of farms has not been supposed to decrease population so much as common
notion

notion would suggest. Something of truth, however, must be allowed in this notion. Fewer labourers *may* sometimes be wanted *after* inclosures, but not in any considerable degree, for in some places *more* are required by the improved husbandry. Inclosures, merely as such, cannot diminish the quantity of land in tillage. Most inclosures for improving lands require tillage as the foundation of improvement: And the *demands* of the markets, for the produce either of arable or pasture, will always govern, in a considerable degree, the choice of the farmer. He will not decrease his arable, and increase his pasture, but in conformity to the demand at market. The demand of *cheese* for *foreign* markets, added to the lessened incumbrance of tithes, on pasture, seems to furnish the principal exception to the above general rule; and this, it is probable, is become and becoming, more a considerable evil than formerly, unless we could have more land.

9. The practice of engrossing small farms has doubtless been rapidly advancing of late years; and the effects have been disadvantageous, from the increasing opulence of the occupiers; ready-made fortunes being frequently carried into large farming: and general opulence favours a disposition to keep up high prices for corn. Such farmers can often fix prices too high, after harvest, and keep them up, because not *necessitated* to a full supply of the markets;

kets; but where there is not some average deficiency of crop, this effect is not likely to be materially felt; and even in a time of scarcity, although the popular clamour may be loud, it seems questionable whether the advance of prices, somewhat beyond the proportion of that scarcity, be not rather a good than an evil, on the whole: But for such advances, to check the consumption, and call for substitutes, the stock might become exhausted, and the evil be the greater. Large farmers also decline the trouble of the smaller produce of farms, as poultry, pigs, &c. And the fewer their commodities, the more they can govern the price of them. To alter the system, and restore variety, with its good consequences, smaller farms should be *added*; to accomplish this, more ground should be brought into new cultivation; and no means of doing it can be equally efficacious with a *general inclosure bill*.

10. The habits of living, among labourers, are doubtless altered considerably in this period. The taste, the *baneful* taste of spirituous liquors, and the common introduction of tea, sugar, and butter, into cottages, has consumed too large a part of the earnings. *Enervation*, and consequent idleness, have increased; and though they live more luxuriously in some articles, they on the whole, doubtless, live “*harder*” than formerly. The system is like *half-luxury* and *half-starvation*.

11. Certainly

11. Certainly they did. Meat, including bacon, is become too dear to be often compassed; and beer, home-brewed, such as the cottager was formerly furnished with from malt at 3s.—3s. 6d.—or at most 4s. per bushel, is now, from the enormous price of barley, and the advance of duties, (consequent on the two or three last wars) quite beyond their reach. This has been the case for several years.

12. Potatoes are in general use: and but for them, it is hard to say how any family, where there are children, and where private aid is not given, could exist without parish pay.

13. More contented than could be expected: at least not turbulent. And it is hoped the awe of authority will be sufficient to preserve peace.

14. This is a question which cannot be answered, unless *returns* had been procured—but the number is certainly increasing.

15. Progressively increasing; but the proportions would require an actual, and laborious survey, to be ascertained.

16. Numerous are the Friendly-Societies and Box-Clubs. The poor are fond of them: their effects uniformly good. Such institutions should be encouraged by Government, as an object of high importance, next in magnitude to a General Inclosure Bill. Those two objects, speedily and ardently attended to, would do more towards diffusing strength and hap-

pincks in the country, and giving scope for national *recovery*, than all other possible schemes of policy. And their adoption is the more desirable, because obvious in their nature, and easy of accomplishment.

17. Not comfortably.

18. Ale-houses have been generally lessened in number every where, within thirty years—more remarkably so within half that period—perhaps in the proportion of one-third or one-fourth—in some places, half have been suppressed.—Effects of course favourable; but for such diminution, and the increase of potatoes, matters must have been abundantly worse.

19. On the whole, there seems to have been an improvement of morals, consequent on an increase of religious instruction, by dissenting and methodist ~~ministers~~. And though profligacy abounds in many, a conspicuous reformation, and an increasing resort to places of publick worship, are encouraging features of these times.

20. The general introduction of Sunday Schools has evidently and usefully increased the number and proportion of *instructed* children in these parts: perhaps twice as many are taught to read as received such instruction ten or fifteen years back; In some places the proportion is much greater.

21. The demand at market, as has been observed before, will always furnish sufficient encouragement; give

give but the proper quantity of ground for tillage, *by an inclosure bill*, and you have the best possible chance for plenty of wheat, without *bounties*; which, if they operated all, or considerably, must, in the present state of things, render scarce, in proportion, some other articles of field produce, when certainly there are none too abundant. The present high price of wheat has doubtless produced a sowing, for the next season, greater than usual: but should government think any step for further *immediate* increase prudent, perhaps the most advisable step would be to offer premiums to those who should *dibble* or *set* with wheat, a certain proportion of their land in the approaching spring—not using more seed than five pecks per acre—but by no means to encourage a further additional *broad-cast sowing*.

22. No doubts can be made of the good policy of using oxen, for the general purposes of husbandry: but this has been often said, and assented to, without much increase of the practice. The improvement should be warmly recommended, and stipulated for by landlords, who would do well uniformly to set the example; but the change can neither be compulsory nor sudden.

23. The use of land by cottagers has been abridged in some degree by inclosure of commons—but certainly not to *national* injury. Other causes of abridgment, it is supposed, are *not* considerable—

wherever land is lessened, for the garden cultivation of cottagers, it is ill policy; and the effect on health and morals must be detrimental. An extension of such cultivation may be looked to as a capital source of improvement among the poor of this country—and consequently of national strength.

W. MATTHEWS.

ART. XXXII.

Directions for Dibbling Wheat, as performed in the county of Norfolk in 1795; communicated by DAVID BARCLAY, esq.

WHEAT is generally planted on a clover lay, and if the land be very light, it should be ploughed a week or ten days before planted; and should a good rain fall, it will be advantageous, because the holes will stand open the better to receive the seed, and the ground will not rise so much when bush-harrowed: In heavier land the plough should precede the dibblers only a day or two, and be planted in the *earliest* part of the season, which should be particularly observed; as heavy land, after much rain, cannot be dibbled.

Plough

Plough the ground from three to four inches deep, and nine inches wide, and make about eighteen furrows on one ridge of land, about five yards wide; but when the soil is very dry, the ridge may be double the breadth: Let a man follow the plough with a spade, and level the flag where it may have been broken by the plough; then roll it with a roller of about seven feet, with one or two horses or oxen, and it is fit for dibbling. A man or a woman has a dibble in each hand about two feet nine inches long, made of iron, the *bottom* of which is made in the form of a *cone*, suitable to make a hole in the ground not less than two inches deep, and the *handle* is covered with wood for the ease of the dibbler, who walks *backward*, and turning the dibbles *partly round*, (which must be particularly observed, because *that action* prevents the mould from falling into the hole) makes two holes on each flag, at the distance of three inches the *lengthway* of the flag. Children follow, and drop in two or three seeds, and care should be taken that they do not drop in more: two at the beginning of the season would be sufficient, and three at the latter end. The land should be bush-harrowed three or four times in a place, the *same day*, by the farmer with bushes fixed to a gate-lift, or if on light harrows, care must be taken that the tines do not penetrate the ground. Seven pecks of wheat prepared as usual are sufficient. One
dibbler

dibbler generally undertakes the business of one gang, after the ground is ploughed and rolled, at 9s. 9s. 6d.—10s. or 10s. 6d. per acre: he hires other dibblers, women at one shilling per day, or men according to their abilities, (women generally do two-thirds of the work of a man) and children of seven or eight years old at three pence halfpenny per day, who follow the dibbler, and drop the wheat into *one* row of the holes: Children, ten or twelve years old, drop into two rows, and receive seven-pence per day. An active dibbler, used to the business, with three droppers at seven-pence per day, can plant nearly half an acre, if the soil be favourable, and the weather permit: Land in good heart, which had been well mucked for turnips, *hoed* and fed off, and sown with barley and grass seeds, which have continued in grass a year or two, is considered not to want manure; but if otherwise, it may be mucked at the rate of fifteen loads per acre, either before it is ploughed, or after it is planted; if the former, plough not more than three inches deep; and if the latter, the muck should be carried on in a frost, or it may be folded with sheep, which is preferable, on account of not carting upon the land.

N.B. Pease and beans are likewise dibbled, and one only put into a hole; and the holes for pease are two on a flag, three inches and half distant lengthways; for beans, only one hole in the middle of the flag,
and

and five or six inches distant. The price of dibbling pease seven shillings, and beans four shillings and six-pence per acre.

N. B. A pair of dibbles is deposited in the Society's Room.

✚ In a former volume the Norfolk Dibbling System is particularly described—but as alterations in the mode of practice, particularly in the prices of dibbling, and the quantities of seed set per acre, have occurred in a lapse of near twenty years, the above minute and faithful account, from so respectable a correspondent, was not to be omitted.

EDITOR.

ART. XXXIII.

*Report of thirty-six kinds of Apples, presented by
Mr. PUGH, of Shaston.*

[By the Committee.]

1. *BARNS-DOOR*, or *Oaken Pin*. Large, fit for dumplings and sauce, a mellow pleasant fruit.
2. *Blush Pippin*. Very fine rich fruit.
3. *Broad-Nose Pippin*. Pleasant flavour, good for cider.
4. *Bunch Pippin*. Very small white fruit, quick flavour, good for cider.
5. *Chickling*. Cider fruit, small size.
6. *Cogge*

6. *Cogge Apple*. Large size, is a bitter sweet, not very valuable.

7. *Farringdon Green*. Large size, spongy, moderately good flavour.

8. *Goose-Bell*, or *Oliphant*. Large, mellow, pleasant fruit, but not likely to keep.

9. *Humberlin*. Small size, spongy, will not keep.

10. *Iberty Streaking*. Large sized fruit, is much like the Herefordshire Red-streak, consequently good cider fruit.

11. *Kernel Apple*. Large sized, pleasant flavoured, juicy, melting fruit.

12. *Jerseys*. Small fruit, very unpleasant flavoured.

13. *Large Lemon Pippin*. Similar to No. 14, but not so sharp, handsome fruit.

14. *Lemon Pippin*. Small size, sharp, pleasant flavour.

15. *Large Kernel Apple*. Large size, quick, very pleasant, melting, and juicy.

16. *Maget*, or *Compton Pippin*. Sharp cider fruit.

17. *Large Maget*, or *Compton Pippin*. Austere, unpleasant flavour, firm flesh.

18. *Maiden's Blush*. Rather large fruit, and handsome, but spongy, and insipid flavour.

19. *Orange Pippin*. Middle-sized fruit, very quick, rich in flavour.

20. *Basset Pippin*. Cyder fruit, sharp, firm flesh.

21. *Simley*

21. *Simley Cupper*. Middling size, very pleasant flavour, and one of the first-rate—if quite ripe might be excellent.

22. *Simley Pippin*. A rich, juicy, pleasant fruit, very inelegant shape.

23. *Sheep's Nose, or Shipling*. Large size, pleasant flavour, and good for fauce, a valuable family fruit.

24. *South-Ham Cupper*. Large fruit, melting, quick, not unpleasant, but rather spongy.

25. *Spice Apple*. Middling sized, sweet, spongy fruit, dry, nothing extraordinary.

26. *Summer Pomeroy*. Spongy, and indifferent flavour.

27. *Sweet Apple*. Middle-sized, spongy, bitter-sweet, not very valuable.

28. *White-Chapel Pippin*. Handsome fruit, and of a quick, pleasant flavour, well worth cultivation.

29. *Wilton Pembroke Pippin*. Large fruit, very pleasant, rich flavour, green flesh.

30. *Winter Merchant*. Small size, quick flavour, good for cider.

31. *Bastard, or Winter Permain*. Small sized, quick, pleasant flavour, very good for cider.

32. *Winter Gilliflower*. Middling size, sweet flavour, melting, but not very rich.

33. *Yellow Permain*. Small fruit, quick flavour, firm flesh, well worth cultivation.

34. *Cathead*.

34. *Cathead*. Very large, quick, pleasant flavoured, valuable for sauce.

35. *The Claret Wine*. Middle sized, handsome fruit, juicy, but very austere, can only be valuable in mixture for cider.

36. *Stone Pippin*. Middle sized, firm, good cider fruit.

ART. XXXIV.

A characteristic account of twenty-nine sorts of Apples, from Mr. J. N. MORSE, nursery-man, of Newent.

SIR,

I HAVE sent you a hamper of fruit, and wish I could have done it better. We have great numbers of other excellent cider fruits, but the old sorts as the *Golden Pippin*, *Redstreak*, *Redmuss*, *Woodcock*, and *Haglade Crab*, bear very sparingly; the trees are old and decayed, and young trees grafted with these fruits succeed very indifferently: they very soon canker and die, but I cannot tell from what cause; many think it is for want of a fresh supply of grafts from Normandy, &c. If any gentleman of the Society can procure grafts of the best sort of fruits of that country, about the month of February or March, I will have them grafted on young thriving stocks. I pro-
cured

cured a few grafts lately from thence. The sort is called *the Golden Norman*. They were grafted in March 1792, and have made shoots eight feet seven inches, are likely to make very capital trees, but have not bore fruit yet.

Apple trees grow well in most soils: we esteem a stiff land inclined to clay the best; the cider made off such land is preferable, and will keep better and longer than that made from sandy or light land; the cider made from sandy or light land is pleasant and good for the first year, and often the second, but is apt to get acid in long keeping. Pear trees thrive better than apples on such a soil.

We esteem a mixture of apples to make the best cider; the fruit ought to be of equal ripeness, and not made until thoroughly ripe and mellow.

FIRST LAYING.

12 *Old Field Pears*. Good tree, bears well, excellent perry, the tree thrives in almost any soil.

8 *Reynold's Crab*. Small reddish apple, good for cider, tree grows to a good size. A loamy clay soil we esteem best for all apple trees.

7 *Marsh Apple*. Very good cider, fine growing tree, bears well.

6 *Two Park Kernel*. Fine cider, ditto ditto.

12 *Hardwick's Kernel*. Ditto, ditto, ditto.

9 *Green Stire*. Ditto.

10 *White Stire*. Ditto, ditto, ditto. }

- 5 *Red Harvey*. Good cider.
- 2 *Never-fail*. Good cider, fine tree, bears well.
- 3 *Maiden's Blush*.
- 1 *Red-Streak*, well known. Excellent cider; the sort almost lost; few graft with it; as the tree cankers and dies, and will not arrive to perfection.
- 2 *Red Mufs*. Ditto, ditto, ditto.

SECOND LAYING.

- 6 *Skerm's Kernel*. Fine pleasant cider, very fine upright growing tree, grows fast, bears well.
- 13 *Underleaf*. Good cider, rather low bushy tree.
- 9 *Cherry Cheek*. Good cider, and fine tree.
- 16 *Golden Pippin*, well known. Excellent cider. A neighbour of mine, Mr. HOLDER of Tainton, sold two hogheads for seventy guineas; the sort nearly lost, as well as the Red-streak and Red-mufs.
- 13 *Orange Pearmain*. Good cider, and fine tree.

THIRD LAYING.

- 13 *Forest Sire*, yellow apple. Excellent cider. I have sold it at thirteen guineas per hoghead, and the person I sold it to sold it again at 18s. per dozen bottles, that is 3l. 10s. per hoghead. Fine tall tree, grows to good size, rather shy bearer.
- 12 *Black Fox Whelp*. Excellent cider, and very fine tree.

15. *Longny*

15 *Longny Russet*. Good cider, ditto.

9 *Red Kernel*. Good cider, and excellent to mix with other fruit, as it is very high colour; very fine tree, and apt to bear.

12 *Brandy Apple*. A new sort here, said to be very good.

FOURTH LAYING.

12 *Haglade Crab, yellow apple*. Excellent cider, good mixed with other fruit, being of high colour, Tree not very large, rather given to canker.

11 *Woodcock*. Good cider, best mixed with other fruit.—Tree grows large, the sort almost gone, very few grafted, as they seldom succeed well.

12 *Green's Kernel*. Good cider, very beautiful tree.

15 *Old Harvey*. Good cider, tree not very large.

FIFTH LAYING.

10 *Oxford-Pippin*. Very good cider, and fine tree.

13 *Landon Pearmain*. Good cider, ditto.

8 *Dutch Quinin*. Very fine cider, fine tree, rather low.

I am, &c.

Newent, Jan. 1794.

J. N. MORSE.

To Mr. Matthews.

ART,

ART. XXXV.

On a new method of propagating Potatoes.

In a letter to Dr. FOTHERGILL.

[By the Rev. J. BARTON.]

Agricultura proxima sapientia.

Experimental Farming and sound Philosophy are nearly allied.

SIR,

I TAKE the liberty of submitting to your consideration, as a vice-president of the Agriculture Society, an experiment which I made last summer on the cultivation of potatoes; and am the bolder in doing this, because if the experiment meet with your approbation, communicating it to you will be the surest means of diffusing a general knowledge of it, and making it useful to society at large, which is the only object I have in view.

In May last a plantation of raspberries which had been made in potatoe ground the preceding autumn, was choaked up with potatoe stalks, from the negligence of the labourers in clearing and preparing the ground. A thought struck me, that they might be made beneficial plants instead of being thrown away as weeds, which had hitherto been the case whenever they grow in forbidden ground. I therefore dug them up carefully, and planted about a hundred

dred of them as I would cabbages in drills, when some manure had been previously laid; and pulled off the potatoes that adhered to the roots of the stalks. On digging them up last autumn, I found that the experiment had succeeded beyond my expectation. Every stalk produced from ten to fifteen potatoes, none very small, and some of an uncommon large size. I weighed the produce of a dozen stalks, and found that they amounted to twenty-seven pounds; but these I took as they lay contiguous to each other in the drill; had I weighed the produce of picked stalks, I am satisfied the weight would have been near forty pounds.

Now, sir, the benefits that will arise from this experiment, if the mode be generally practised, I take to be the following:—Whenever potatoes shall be left in the ground, the stalks that grow from them will reward the industry of the farmer, in clearing the ground of them; and the potatoes (adhering to the roots) may be given to the pigs. The man of fortune will give these stalks to his cottagers, or to poor people, to plant in their little gardens, which must be a relief to them, when potatoes happen to be scarce in the spring.

Those who have small potatoes only fit to be thrown to their hogs, can make beds of them in November, and plant out the stalks in spring, or sell them in the market as they would cabbage plants.

In

In many places the inhabitants are obliged, from the wetness and poverty of the soil, to defer planting their potatoes till late in the summer, too late to have any considerable produce. I do imagine that this mode of culture would succeed much better in such cases than the common method, for there would be no danger of the stalks rotting in moist ground, as the seed potatoes are apt to do, and also less manure would be necessary. I take it also, that there would be a considerable saving in labour in this method of cultivation; for a field designed for potatoes could be prepared in the same manner as a field for cabbages, and planted out in the same manner.

It has one advantage over Mr. MAUNSELL's plan, or setting from the shoot; because I am informed, that crops in his mode of culture are liable to fail in particular seasons. This, I suppose, will never be the case in my method. Because nothing, I imagine, can materially injure the stalks but frost. Now this inconvenience can be easily avoided, because they need not be planted till all biting frosts are over; any time from the middle of March to the middle of June will answer for this purpose. For a person told me, who took the hint from me, that in weeding his potatoes last summer, he pulled out the lateral stalks from the main ones, in order to strengthen the latter, and planted them out in my method, just as they were opening into blossom; and that he had an excellent crop from them.

If any stalks happen to be too long at the time of planting, they may be cut short like a cabbage plant, and they will grow equally well.

It would be a satisfaction to me to have your candid opinion of this.

I am, Sir,

your obedient humble servant,

J. BARTON.

April 22, 1795.

N. B. This method of raising potatoes, by the Rev. Mr. B. seems to merit the Society's attention, and that of the publick, particularly at this season.

A. FOTHERGILL.

ART. XXXVI.

A Letter from THOMAS SOUTH, esq; of Boffington, explaining his reasons for delaying the publication of his long-expected Treatise on Wall-Fruit Trees.

DEAR SIR,

Boffington, Oct. 11th, 1795.

YOU having, with the most benevolent intention, inserted in the sixth volume of the Bath Memoirs a private letter of mine, which may have led the publick to expect a Treatise on the cultivation of

Wall-Trees differing from the modern practice, and productive of their fruits in the highest excellence; I must trespass on your goodness so far as to desire that you will make my apology, in your next publication, for not being as yet prepared to finish the work. I trust you know me too well, to think me capable of imposing an imperfect one on the world. Let me wait, therefore, till I have grown every peach and nectarine, that our catalogues contain, under my own eye; and then you shall have my opinion concerning them. And as I know not of any sorts, but what have been, or are at present in my collection, it cannot be long before my knowledge of their fruits will be perfect. And in the mean time, I remain, dear Sir,

your obliged,

T. SOUTH.

P. S. As Boffington is only three miles from Stockbridge, any gentleman of curiosity travelling that road, who wishes to see the certainty and degree of perfection to which pruning is now brought, has permission to see my trees at any time, but they appear to most advantage between Midsummer and the fruiting season.

To Mr. Matthews.

*An Account of the progressive Improvement
of different kinds, kept*

By the MARQUIS

In Order to ascertain their respective Merits

<i>Sorts of Sheep,</i> ALL BEING LAMBS of 1791, And put the Flock in July 1792.				
	Average Weight July 1792, when put to Flock.	Average Value July 1792, after being shorn.		
	<i>lbs.</i>	<i>s.</i>	<i>d.</i>	<i>lbs.</i>
LEICESTER.	105	19	8 $\frac{1}{4}$	14
COTSWOLD.	95	17	9 $\frac{1}{4}$	15
DORSETSHIRE.	119	22	3 $\frac{3}{4}$	10
WILTSHIRE.	98 $\frac{3}{4}$	18	6	8
MENDIP.	95 $\frac{3}{4}$	17	11 $\frac{1}{4}$	10
SOUTH-DOWN.	82 $\frac{1}{2}$	15	5 $\frac{1}{2}$	7

In this Experiment, Regard must be had not only to the relative Quantity of Food consumed by each. It being (or folding) State, their Food is nearly in Proportion to equal to ten Dorsets, but the Food that maintained the

The Object of this Experiment was, to determine

The above Sheep were kept on a Tract of very poor every Night, (chiefly on Arable Land) from one to two Kinds of Sheep are the hardiest. The small Increase in folded seems to show that long-wooled Sheep are not fit

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far as to desire
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F. SOUTH.

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Midsummer and

*An Account of the progressive Improvement in Weight, and Value, of a FLOCK of SHEEP,
of different kinds, kept together and folded for Three Years,*

By the MARQUIS of BATH, at LONGLEAT, WILTS,

In Order to ascertain their respective Merit for Wiltshire Husbandry, and afterwards fattened and killed together.

Sorts of Sheep,

ALL BEING
LAMBS of 1791,
And put the Flock in July 1792.

Sorts of Sheep, ALL BEING LAMBS of 1791, And put the Flock in July 1792.	Average Weight July 1792, when put to Flock.		Average Value July 1792, after being shorn.		THREE YEARS' WOOL, 1793, 1794, and 1795.				Weight per sheep, July 1795, after being folded three Years.	Increase in Weight per Sheep.	WEIGHT OF MUTTON, and VALUE, When killed at, Dec. 1795.		IMPROVEMENT on the Original Value, including three Years' Wool.			
	lbs.	s.	d.	lbs.	oz.	s.	d.	Average WEIGHT.			Average VALUE.	£.	s.	d.	£.	s.
LEICESTER.	105	19	8 ¹ / ₄	14	11 ¹ / ₄	11	0	125	20	79 ¹ / ₂	1	19	9	1	11	0 ¹ / ₂
COTSWOLD.	95	17	9 ¹ / ₄	15	12	11	9 ¹ / ₄	108 ¹ / ₂	13 ¹ / ₂	76	1	18	0	1	12	0
DORSETSHIRE.	119	22	3 ³ / ₄	10	0 ¹ / ₂	10	0 ¹ / ₄	141	22	83 ¹ / ₂	2	19	9	1	9	5 ¹ / ₂
WILTSHIRE.	98 ¹ / ₄	18	6	8	9 ¹ / ₄	8	11	140	41 ¹ / ₂	82 ¹ / ₂	2	1	3	1	11	8
MENDIP.	95 ³ / ₄	17	11 ¹ / ₄	10	6 ¹ / ₂	11	2 ¹ / ₂	136 ¹ / ₄	40 ¹ / ₄	82	2	1	0	1	14	3 ¹ / ₂
SOUTH-DOWN.	82 ¹ / ₂	15	5 ¹ / ₂	7	15	10	4 ¹ / ₂	129 ¹ / ₄	46 ¹ / ₄	84 ¹ / ₂	2	2	3	1	17	12

In this Experiment, regard must be had not only to the comparative Improvement of each Kind of Sheep, but to the comparative Quantity of Food consumed by each. It being a well-ascertained Fact, that during the Time they are kept in a working (or folding) State, their Food is nearly in Proportion to their Weight. So that not only eight South-Down Sheep have improved equal to ten Dorsets, but the Food that maintained ten Dorsets, would have maintained fifteen South-Downs.

The Object of this Experiment was, to determine what Kind of Sheep would best bear hard Keeping and constant Folding.

The above Sheep were kept on a Tract of very poor heathy Land, not worth 3s. per Acre, and from thence driven to Fold every Night, (chiefly on Arable Land) from one to two Miles distant from their Food.—The Result seems to prove that the smaller Kinds of Sheep are the hardiest. The small Increase in Weight in the Leicestershire and the Cotswold during the Time they were folded, seems to shew that long-wooled Sheep are not fit for that Purpose. And as the three Kinds of horned Sheep (the Dorsets, Wilts, and Mendip) have increased in Value nearly an inverse Ratio with their original Size, it seems that increasing the Size of the Animal has made them less hardy. This Experiment also proves decidedly, that the South-Down Sheep are full as profitable to the Grazier, as to the Farmer.

ART. XXXVIII.

Some Remarks on the Drill Husbandry, extracted from a Letter, to the Secretary.

[By JOS. WIMPEY, esq.]

[The following Extract is a short one, but as it contains the practical sentiments of an old and ingenious correspondent, and perhaps are the last lines he ever penned on agriculture, they are here inserted; the gentleman to whom the principal allusion is made, and for whom Mr. WIMPEY had a high respect, would doubtless oblige many members of the Society, by any necessary explanation.]

MY DEAR FRIEND, *Bratton-Clovelly, Oct. 4, 1795.*

YOUR much-esteemed favour of the 15th ult. is now before me. I received the 7th volume of the Society's Papers at the same time, for which you have my best thanks. It gave me pleasure to see the name of the Rev. Mr. CLOSE in the table of contents; but in the perusal was miserably disappointed by its conciseness, and total barrenness of detail. The facts asserted are of the most important nature; and a particular description of the several processes would have been an invaluable treasure to the practical farmer. I have the highest opinion of Mr. C.'s skill, ingenuity, and veracity; but he is a very extensive cultivator indeed, if he saves more than

than 200l. per ann. in the article of seed only, by sowing with Cook's machine instead of the common method; as I calculate, from eight hundred to twelve hundred acres of wheat yearly. I am much afraid some error has here crept in, perhaps it is in my conception of this matter. Pray can you remove the difficulty? He has decided clearly and strongly in favour of the drill mode; but, taking the whole of his paper into consideration, it should seem the advantage arises more from the savings in the seed than in an increase of the produce; so that the merit is imputable to the machine rather than the drilling. The sowing the seed regularly, as to distance and depth, is undoubtedly advantageous; but let the ground be as well prepared for promiscuous sowing by hand as it *must* be for the machine, and it will be found that three bushels of barley, sown upon an acre in the old method, will be superior to two bushels sown with the machine by three or four times the difference of the seed; of the truth of this, I have had the clearest and most satisfactory ocular demonstration. I am well satisfied the principal part of the merit ascribed to this mode of sowing is, in a great measure, owing to the more perfect culture of the soil which is *necessarily* bestowed for that mode of sowing; but in agriculture, nothing is more common than to ascribe effects to causes which had no hand in their production. This in practice ever has
been,

been, and I fear, ever will be, a fruitful source of error. The true principle of the drill method is very far from being *generally* well understood, even by drill machine makers. They have dropped and lost the principle on which the superior success of that mode is supposed, or rather *known*, to depend; for close drilling, or any drilling that does not allow intervals for thoroughly pulverising the soil, and preparing it for future crops, has little advantage over the common method. I am afraid agriculture will acquire little improvement from experimentors, till they can be prevailed upon to act upon more liberal principles; but while the paltry consideration of a premium preponderates against publick good, no success can be reasonably expected; the motive is too selfish for it to survive the reward that gave it birth; and they commonly expire together.

I had begun a first attempt to explain and enforce the drill husbandry, but my indisposition became so great, that I was forced to abandon it; whether I shall be able to resume it, God only knows.

[The latter part of this letter contained an affecting account of the author's growing infirmities, which soon after put a period to his existence, in the 83d year of his age. The clearness of his faculties, and the ardour of mind, which he discovered to the last, for the promotion of useful knowledge, together with the manly and virtuous sentiments which adorned his latter days, may not improperly be mentioned here, as the probable fruit of a plain, active, country life, which he had chosen and pursued.]

ART. XXXIX.

Experiments made with a view to ascertain the truth and importance of Dr. HUNTER's Opinions, respecting the Food of Plants.

[By Major VELLEY.]

THE laudable exertions of the Board of Agriculture having called forth various expedients both from the practical and theoretical improvers of land, for the advancement of cultivation in general; I selected, from among sundry tracts recommended by the Board, the one entitled, "The Outlines of "Agriculture," published by Dr. HUNTER, the learned editor of Evelyn's Sylva; in which work the above-mentioned tract made its first appearance in the form of a note. In the seventh page of the pamphlet, the ingenious author thus expresses himself:—"I lay it down as a fundamental maxim, that "all plants receive their principal nourishment from "oily particles incorporated with water, by means of "an alkaline salt or absorbent earth." Having supported this hypothesis by various arguments, he notices a preparation as follows:

One drachm of Russia pot-ash dissolved in two ounces of water, then add two spoonfuls of oil:—p. 19.

This mixture, the author asserts, "is adapted to "all the purposes of vegetation."

Pleased with the information, I determined to give the fairest trial to the experiment, and chose a piece of ground which was fresh, and had not received any manure. In this I made six contiguous beds. I then marked out in each bed one hundred and twenty-eight spots, four inches asunder every way. In the first bed I planted the same number of barley seeds, which had been steeped three days in the above mixture. After this, I planted in the same manner, and in the adjoining bed, the same quantity of seeds *dry* and *not steeped*; but before the soil was closed upon them, I poured into every hole two-thirds of a drachm of the said composition,—a quantity so small as scarcely to fill a tea-spoon, and which could not have been supposed to produce any visible effect. I then planted in the third bed the same number of seeds in their natural state, *unprepared*, and *without any* composition.

The following observations I made with great accuracy:—The seeds which had been steeped did not make their appearance so soon by eight or nine days as the grain which had been planted *without any* preparation: and those seeds, upon which the mixture had been poured, continued *still longer* in the ground, insomuch that I thought they had been entirely destroyed; at last, however, they came up, though but sparingly, and *less* in quantity than those which had been steeped:—but both sorts were far less productive

tive than those which had been *totally unprepared*. The last produced near double the quantity to the next best, as will appear from the annexed accounts of the relative productions of the different beds.

I repeated the same experiment with oats, in the same manner as before stated, in every respect, and planted them in the three adjoining beds: and it was singular enough to observe the same effects precisely as to the time of their coming up, and of their ripening, as well as with regard to their produce, which I had before remarked in the barley. In both instances, the *unprepared* grain was much more forward in its appearance and state of maturity, as also much more abundant, than either of the other two.

All the seeds were planted with the Norfolk dibble, exactly at the same depth, at the same time, and in adjoining beds, under the same aspect, in an open though rather loamy soil, which had not been manured.

TABLE of the relative productions of grain, as noticed in the above account.

	Ears.
BARLEY, <i>steeped</i> , eight or nine days more backward than the <i>dry</i> grain, produced	465
BARLEY, <i>not steeped</i> , but having a small quantity of the mixture poured into the hole with it, was still longer in the ground than the former, and produced	236
BARLEY,	

Ears.

BARLEY, *unprepared*, came up eight or nine days sooner than the *first*, and produced 750

OATS, *steeped*, were seven or eight days more backward than the *dry* grain, and produced 159

OATS, *not steeped*, but having a small quantity of the mixture poured into the hole with them, were longer in the ground than the former, and produced 103

OATS, *unprepared*, came up seven or eight days sooner than the *first*, and produced 238

An objection may possibly be made to the small scale upon which the essay has been brought forward: yet as the effects produced by the composition, and by the varied modes of applying it, were remarkably similar in the different sorts of grain, planted at the same time, and in the same soil; I think such an objection cannot reasonably invalidate an experiment of this nature; more especially when it is considered that a greater degree of accuracy and precision can accompany similar attempts upon a smaller scale, than when extended to a greater scope. And if I am not greatly mistaken, some of the very ingenious observations, which the learned chemist Dr. INGENHOUZE has lately given to the world, with respect to the nutriment and support of vegetable life, have been founded upon experiments, ever
more

more confined in their extent, though not less worthy of attention on that account, than those above cited.

THOMAS VELLEÏ.

ART. XL.

A practical Description of a particular Mode of Improving certain Lands—and a Dissertation on the Improvement of Cattle.

[BY JOHN WHITE PARSONS, esq.]

N. B. Though the following mode of Improving Land is certainly not a new discovery, yet, as coming from so practical an improver, and being so well described, it is judged highly worthy of communication to the publick; for the method cannot be too extensively known.

DEAR SIR,

West-Camel, Oct. 3, 1796.

PAINFUL as the task of writing always is to me, (or I should not have given up the lucrative profession of the law for the peaceful shepherd's life) yet at *your particular request*, with pleasure I take up my pen, to disclose to you my secret of converting *clay* into *gold*, which I have found to be the best manure for dividing and improving strong, sour, and swampy clay land;—and is as follows:

In

In the months of February and March, the ground intended to be improved should be trenched in the following manner: Let the principal carriage trenches be at least three feet deep, and two feet and a half wide, and the lesser ones, eighteen by fourteen. In digging them, throw the first spit, being turf, regularly on one side, and the bottom spit, being clay, should be laid in heaps on the other side of the trenches, to take the sun and air. When you begin your work, if your ground be incumbered with thorns, furze, &c. they, when grubbed up and dry, may be used as part of the fuel which will be wanted to burn the earth; and in the month of May you should begin by taking a few loads of your worst clay, and with it make a circular floor or foundation, about a foot thick, to prevent burning the surface of the earth under the intended heap. In the middle of your floor put three or four large billets of wood almost upright, bearing against one another, and round throw small faggots, roots, and brushwood, intermixed with a little cleft wood, as if you were building a pile, to the height of about six feet; after this begin to bring, in your three-wheel one-horse carts, the turf or clods round your floor, with which you build a kind of kiln, regularly, as you would a wall, close to the heap of wood, circularly all round it, and of the same height with it. Your wall must be about eighteen inches thick. In your wall,

wall, at the bottom of your kiln, leave at equal distances three or four vent-holes about two feet wide and two feet high, placing three or four sticks across each vent-hole like lintels over windows. The building being thus finished, you must throw four or five loads of the dryest turf on the crown of the pile. When all is thus in readiness, with straw kindle the fire at once at all the vent-holes; and when you think that the whole pile is on fire, you are to stop up entirely the vent-holes, walling them up with turf, like the rest of your heap: then, from time to time, you must supply your heap with the quantity of turf and clay that you will find necessary, which you must guess at from the smoke that comes out of the top at the heap. If it smokes furiously, it is a sign that the fire is too quick, in which case you must throw clay in greater plenty, which will force the heat through the sides; but if the smoke comes out but very slowly, you must stop your hand, and give the heap a little air, by making holes through the crown of it with a long sharp stake, and afterwards throw gradually and with judgment clay and turf alternately. When, by throwing, you have raised your heap as high as you can conveniently, and the fire has nearly reached the top, you must rake down the red-hot ashes with a long dung crook, covering them immediately with turf; meanwhile the wall will be burning through, and to supply the place of it a new one

one must be built likewise of turf against the old wall before it is quite consumed, which will keep the heap together, and by often pulling it down prevents its burning too fast. A heap of sixty or seventy feet in circumference will keep two or three carts employed to fetch turf, and clay, and will burn five hundred loads of ashes in a week. The fire must be watched constantly, at all times, late in the evening and early in the morning; and one Sunday in a year we generally have our good pastor's leave to spend unholily, in preventing the fires from burning too quick, which, for example's sake, he has often thought proper to sanction with his own hands.— Sometimes the fires burn so fast that five or six men are wanted continually to throw up clay to moderate its heat, and prevent its burning through.

Dry summers are the most convenient for this work; wet seasons only delaying it, as large fires, after two or three days burning, are never put out by rain, and the ashes are more carbonaceous and fertilizing the sower they are burnt. The ant-hills, if there be any on the land, should also be cut clean up (not thrown) and burnt with the clay, out of the trenches, ditches, pool-banks, and other offensive matter which most fields are incumbered with, and which generally affords a calcareous dressing for the same land of forty or fifty large pit-loads per acre; and, as it were, *free of cost*; as the cost of draining, grubbing,

grubbing, hill-throwing, and removing the clay off the land, would be otherwise incurred in the course of common husbandry. As the most convincing way of proving to you that retentive clay-lands, poisoned with stagnant water, and reputed to be worthless, are thus to be made by fire, I have one estate, still lying in the midst of a desert belonging to FRANCIS KINGSTON GALPINE, esq; of Blandford, that about twenty years ago was over-run (as his is now) with thorns, furze-bushes, ant-hills, and every unwholesome aquatick weed, and then let at 19l. per annum, out of which were deducted the taxes and repairs; which estate having been since *salivated* (if I may be allowed the expression) is now cheap in 60l. a year, and likely in a few years to be worth 100l. without dung or any purchased manure whatever: and I have forty acres of grass land in another parish, that is also lying in a wilderness quarter belonging to Sir HENRY MILDMAY, which I took into hand about a year ago, then let at 18l. a year, out of which were also allowed taxes and repairs, and which usually reduced it to 12l. a year, that is now made worth at least 50l. a year, without any other help. I cannot speak more particularly as to the expence, than by saying, that it has never cost me, in any one instance, more than three pounds per acre; and that I am sure it is the cheapest and most lasting of all manures, next to marling, (in some very congenial and particular situations)

ations) and sure to pay a very great interest for money, where there are no rhynes and deep ditches to be made, which I have always had to do at nearly half the expence; which, besides insuring most excellent and impenetrable live hedges, has, in several instances, at once laid whole fields dry, lying on a declivity, when we have happened to dig through beds of gravel, sand, or stone.

Taking advantage of a very wet day, I have been writing to the Earl of EGREMONT about cattle; and as you know I have lately dared to stand upon very bold ground at Bath, and have broached some very strange new doctrines, which the Tup Society are sure to cry down; I cannot forbear troubling you with an extract from my letter, as I shall be glad to have your thoughts (which I am sure you will give sincerely) on this useful and important subject:—

“ The opinion I entertained in favour of *crossing*,
 “ I did not presume to give your lordship as mere
 “ matter of opinion and theory; but as I am con-
 “ vinced, after long experience and close attention
 “ to the breeding of domestick animals, that it is
 “ the surest and nearest road to perfection for men of
 “ genius to take, as it is also in careless hands a most
 “ dangerous and destructive practice. And I charge
 “ Mr. BAKWELL (whose memory I reverence as one
 “ of the greatest and most useful men this country
 “ ever

“ ever bred, and who well knew how to go faster,
 “ than the age in which he lived, in this branch of
 “ science) with wilful procrastination in giving sym-
 “ metry, fine wool, fine quality of mutton, and small
 “ heads and legs to the old Leicesters (naturally the
 “ coarsest and most unprofitable breed of sheep in
 “ the Island) which he might have done in three
 “ years as well as in five-and-twenty, and not have
 “ left his work unfinished; as he certainly would
 “ have bred them finer in the flesh and fleece if he
 “ had lived, as his latest improvements evidently
 “ make appear. A strong instance in favour of
 “ crossing (using the best sort as a basis only) is
 “ the ram I shewed at Bath, being a composition of
 “ the Exmoor-forest sheep, the South-Devon, the
 “ Dishley, and the Somerset. And I have a *three-*
 “ *year* old steer, now fattening, upon land that a few
 “ years ago was dear in five shillings an acre, which
 “ I mean to show at the next annual meeting at Bath,
 “ half French and half Devon, got by the bull at
 “ Petworth out of a very small Jersey cow, that
 “ will, before Christmas, be dead ripe, and worth
 “ at least twenty-five pounds, two-pence per pound
 “ better in quality, and *riper at three years old*,
 “ than the Yorkshire, Herefordshire, or long-horn
 “ cattle are at seven, the Suffex at six, or the Devon-
 “ shire at five; and I have some two-year old sheep
 “ now fattening, bred from ewes which I had caught

“ in wild from the *sea cliffs* at 6s. per head, got by
 “ my own rams, uniting more good qualities and
 “ nearer to perfection, according to the principles
 “ laid down by Mr. BAKEWELL, (which I believe to
 “ be just) than any I have yet seen produced from
 “ ewes purchased at six or ten guineas a-piece.—
 “ Therefore, having observed the improvements in
 “ stock to be uniformly the same in all the different
 “ breeds and crosses that I have tried, I cannot now
 “ forbear venturing an opinion, which is, that the
 “ Devonshire cattle, and Mr. BAKEWELL’s new va-
 “ riety of sheep, though capable of improving all
 “ the other sorts in the island in a very great and
 “ striking degree, are themselves still further to be
 “ ameliorated and improved by a judicious admixture
 “ of *blood*; and therefore I cannot forbear advan-
 “ cing, with some degree of confidence, what I con-
 “ ceive to be as interesting to the community as it
 “ may be mortifying and perplexing to some of the
 “ great breeders of the North, (who have been all
 “ their lives only following and groping in the dark
 “ and mysterious paths of nature after the great lu-
 “ minary that is gone, without having discovered any
 “ of his ways) that at present there is *no* known best
 “ breed of cattle or sheep; and that every species of
 “ domestick animal is to be advanced in like manner
 “ as the horses of this country have been improved
 “ by crossing with the Arabian, Persian, Turkish,
 “ Spanish,

“ Spanish, or Barbary horse or mare; and as our
 “ best English pigs have been greatly improved by
 “ a mixture with the Chinese. And I should expect
 “ to find more good sheep, cattle, and horses, in
 “ Shetland, the Highlands of Scotland, the deserts
 “ of Arabia, the Welch mountains, the islands of
 “ Jersey, Guernsey, and Alderney, and in the north
 “ of Devon, where the blundering art and conceit
 “ of man has never reached them, than in the Mid-
 “ land counties, where all the quackery and mystery
 “ have been practised. It is an opinion too univer-
 “ sally prevalent, that the breed of animals found in
 “ any one district is more particularly adapted to the
 “ nature of the climate, and other circumstances re-
 “ lating thereto, than any other that could be in-
 “ troduced into it; and that the particular qualities
 “ of any breed of any domestick animal, that may
 “ have continued long in any one district, are chiefly
 “ to be attributed to the nature of the pasture, or
 “ some particularities of the soil or climate of that
 “ district, and not to any difference in the primitive
 “ qualities of the original breed: both of which
 “ opinions I know to be erroneous. And surely
 “ such bigoted farmers cannot know how long the
 “ silk-worm was confined to a particular district of
 “ Asia, before it was known that it could be reared
 “ to as great perfection in many parts of Europe
 “ as in its original native country;—that pears,
 “ cherries,

“ cherries, peaches, apricots, and all the other
 “ fine fruits of our gardens, are natives of other
 “ distant countries, and were utterly unknown to
 “ our ancestors;—that clover, cabbage, turnips,
 “ with almost all the numerous train of garden roots,
 “ were only of late introduced into Britain, where
 “ they are now grown in greater perfection than on
 “ any other part of the globe;—that horses, cows,
 “ and sheep, were not known in America before the
 “ Europeans settled there. In short, the benefits
 “ that society hath reaped from judiciously trans-
 “ planting the animals and vegetables of one country
 “ into another that may stand in need of them, are
 “ so many and great as might fill whole volumes
 “ barely to enumerate, and ought to serve as a strong
 “ incitement in us to attempt farther improvements;
 “ and to strengthen us in the belief, that, subject to
 “ our continual improvement or debasement, the
 “ great Author of Nature has caused the same num-
 “ berless varieties in the animal as in the vegetable
 “ world. And therefore I cannot give up my opinion
 “ that by right judgment in crossing, the choicest ani-
 “ mals remain to be produced, uniting all the good
 “ qualities for which they are wanted, with the
 “ same success as I have myself produced some of
 “ the most beautiful flowers and choicest fruits from
 “ seed. I will not apologize for troubling your lord-
 “ ship so long with my ideas on this useful and im-
 “ portant

“portant subject, however erroneous they may be,
 “knowing that it is not any particular breed of
 “cattle or of sheep that your Lordship wishes to
 “advance and promote, but the *universal and most*
 “*extensive* good, which never can be pursued to an
 “excess.”

I am, dear Sir,

your very sincere friend,

and obliged humble servant,

JOHN WHITE PARSONS.

